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Columbian Cyclopedia

KD44496

THE
COLUMBIAN
CYCLOPEDIA

THIRTY-TWO VOLUMES
VOL. 30
TIN—VALENTINITE

WITH ILLUSTRATIONS

BUFFALO, N. Y.
GARRETSON, COX & COMPANY
1897

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′thėr.*
ã	care, fair	*cãr, fãr.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr, stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth.*
õ	Goethe (similar to *e* in her)	*gõ′tėh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
û	full, push, good	*fûl, pûsh, gûd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chār, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dĕl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
th	though, breathe	*thō, brēth.*
z	zeal, maze, muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′ėr, vĭzh′ŭn.*

ABBREVIATIONS USED IN THIS WORK.

a., *or* adj	adjective
A.B	Bachelor of Arts
abbr	abbreviation, abbreviated
abl. *or* abla.	ablative
Abp	Archbishop
abt	about
Acad	Academy
acc. *or* ac.	accusative
accom	accommodated, accommodation
act	active
A.D.	in the year of our Lord [*Anno Domini*]
Adjt	Adjutant
Adm	Admiral
adv. *or* ad.	adverb
A. F.	Anglo-French
Ag	Silver [*Argentum*]
agri.	agriculture
A. L.	Anglo-Latin
Al	Aluminium
Ala	Alabama
Alb	Albanian
alg	algebra
A.M.	before noon [*ante meridiem*]
A.M.	Master of Arts
Am	Amos
Amer	America, -n
anat.	anatomy, anatomical
anc	ancient, anciently
A. M.	in the year of the world [*Anno Mundi*]
anon.	anonymous
antiq.	antiquity, antiquities
aor	aorist, -ic
app	appendix
appar	apparently
Apr	April
Ar	Arabic
arch	architecture
archæol	archæology
arith	arithmetic
Ark	Arkansas
art	article
artil	artillery
AS.	Anglo-Saxon
As.	Arsenic
assoc	Association
asst	assistant
astrol	astrology
astron	astronomy
attrib	attributive
atty	attorney
at. w	atomic weight
Au.	Gold [*Aurum*]
A.U.C.	in the year of the building of the city (Rome) [*Anno urbis conditæ*]
Aug	August
aug	augmentative
Aust	Austrian
A. V.	authorized version [of Bible, 1611]
avoir	avoirdupois
B	Boron
B	Britannic
b	born
Ba	Barium
Bart	Baronet
Bav	Bavarian
bl.; bbl	barrel; barrels
B.C	before Christ
B.C.L.	Bachelor of Civil Law
B.D.	Bachelor of Divinity
bef	before
Belg	Belgic
Beng	Bengali
Bi	Bismuth
biog	biography, biographical
biol	biology
B.L	Bachelor of Laws
Bohem	Bohemian
bot	botany, botanical
Bp	Bishop
Br	Bromine
Braz	Brazilian
Bret	Breton
Brig	Brigadier
Brit	British, Britannica
bro	brother
Bulg	Bulgarian
bush	bushel, bushels
C	Carbon
c	century
Ca	Calcium
Cal	California
Camb	Cambridge
Can	Canada
Cant	Canterbury
cap	capital
Capt	Captain
Card	Cardinal
carp	carpentry
Cath	Catholic
caus	causative
cav	cavalry
Cd	Cadmium
Ce	Cerium
Celt	Celtic
cent	central
cf	compare [*confer*]
ch *or* chh	church

ABBREVIATIONS.

Chal	Chaldee
chap	chapter
chem	chemistry, chemical
Chin	Chinese
Chron	Chronicles
chron	chronology
Cl	Chlorine
Class	Classical [= Greek and Latin]
Co	Cobalt
Co	Company
co	county
cog	cognate [with]
Col	Colonel
Col	Colossians
Coll	College
colloq	colloquial
Colo	Colorado
Com	Commodore
com	commerce, commercial
com	common
comp	compare
comp	composition, compound
compar	comparative
conch	conchology
cong	congress
Congl	Congregational
conj	conjunction
Conn *or* Ct.	Connecticut
contr	contraction, contracted
Cop	Coptic
Cor	Corinthians
Corn	Cornish
corr	corresponding
Cr	Chromium
crystal	crystallography
Cs	Cæsium
ct	cent
Ct. *or* Conn.	Connecticut
Cu	Copper [*Cuprum*]
cwt	a hundred weight
Cyc	Cyclopedia
D	Didymium
D. *or* Dut.	Dutch
d	died
d. [l. s. d.]	penny, pence
Dan	Daniel
Dan	Danish
dat	dative
dau	daughter
D. C	District of Columbia
D.C.L	Doctor of Civil [or Common] Law
D.D	Doctor of Divinity
Dec	December
dec	declension
def	definite, definition
deg	degree, degrees
Del	Delaware
del	delegate, delegates
dem	democratic
dep	deputy
dep	deponent
dept	department
deriv	derivation, derivative
Deut	Deuteronomy
dial	dialect, dialectal
diam	diameter
Dic	Dictionary
diff	different, difference
dim	diminutive
dist	district
distrib	distributive
div	division
doz	dozen
Dr	Doctor
dr	dram, drams
dram	dramatic
Dut. *or* D.	Dutch
dwt	pennyweight
dynam *or* dyn	dynamics
E	Erbium
E. *or* e	East, -ern, -ward
E. *or* Eng.	English
Eccl	Ecclesiastes
eccl. *or* eccles	ecclesiastical [affairs]
ed	edited, edition, editor
e.g	for example [*ex gratia*]
E. Ind. *or* E. I.	East Indies, East Indian
elect	electricity
Emp	Emperor
Encyc	Encyclopedia
Eng. *or* E.	English
engin	engineering
entom	entomology
env. ext	envoy extraordinary
ep	epistle
Eph	Ephesians
Episc	Episcopal
eq. *or* =	equal, equals
equiv	equivalent
esp	especially
Est	Esther
estab	established
Esthon	Esthonian
etc	and others like [*et cetera*]
Eth	Ethiopic
ethnog	ethnography
ethnol	ethnology
et seq	and the following [*et sequentia*]
etym	etymology
Eur	European
Ex	Exodus
exclam	exclamation
Ezek	Ezekiel
Ezr	Ezra
F	Fluorine
F. *or* Fahr.	Fahrenheit
f. *or* fem	feminine
F. *or* Fr	French
fa	father
Fahr. *or* F	Fahrenheit
far	farriery
Fe	Iron [*Ferrum*]
Feb	February
fem *or* f.	feminine
fig	figure, figuratively
Fin	Finnish
F.—L	French from Latin
Fla	Florida
Flem	Flemish
for	foreign
fort	fortification
Fr. *or* F.	French
fr	from

ABBREVIATIONS.

freq	frequentative
Fris	Frisian
ft	foot, feet
fut	future
G. *or* Ger	German
G	Glucinium
Ga	Gallium
Ga	Georgia
Gael	Gaelic
Gal	Galatians
gal	gallon
galv	galvanism, galvanic
gard	gardening
gen	gender
Gen	General
Gen	Genesis
gen	genitive
Geno	Genoese
geog	geography
geol	geology
geom	geometry
Ger	German, Germany
Goth	Gothic
Gov	Governor
govt	government
Gr	Grand, Great
Gr	Greek
gr	grain, grains
gram	grammar
Gr. Brit	Great Britain
Gris	Grisons
gun	gunnery
H	Hegira
H	Hydrogen
h	hour, hours
Hab	Habakkuk
Hag	Haggai
H. B. M.	His [or Her] Britannic Majesty
Heb	Hebrew, Hebrews
her	heraldry
herpet	herpetology
Hg	Mercury [*Hydrargyrum*]
hhd	hogshead, hogsheads
Hind	Hindustani, Hindu, or Hindi
hist	history, historical
Hon	Honorable
hort	horticulture
Hos	Hosea
Hung	Hungarian
Hydros	Hydrostatics
I	Iodine
I.; Is	Island; Islands
Icel	Icelandic
ichth	ichthyology
Ida	Idaho
i.e.	that is [*id est*]
Ill	Illinois
illus	illustration
impera *or* impr	imperative
impers	impersonal
impf *or* imp.	imperfect
impf. p. *or* imp	imperfect participle
improp	improperly
In	Indium
in	inch, inches
incept	inceptive
Ind	India, Indian
Ind	Indiana
ind	indicative
indef	indefinite
Indo-Eur	Indo-European
inf	infantry
inf *or* infin.	infinitive
instr	instrument, -al
int	interest
intens	intensive
interj. *or* int	interjection
interrog	interrogative pronoun
intr. *or* intrans	intransitive
Io	Iowa
Ir	Iridium
Ir	Irish
Iran	Iranian
irr	irregular, -ly
Is	Isaiah
It	Italian
Jan	January
Jap	Japanese
Jas	James
Jer	Jeremiah
Jn	John
Josh	Joshua
Jr	Junior
Judg	Judges
K	Potassium [*Kalium*
K	Kings [in Bible]
K	king
Kan	Kansas
Kt	Knight
Ky	Kentucky
L	Latin
L	Lithium
l. [l. s. d.], *or* £	pound, pounds [sterling]
La	Lanthanium
La	Louisiana
Lam	Lamentations
Lang	Languedoc
lang	language
Lap	Lapland
lat	latitude
lb.; llb. *or* lbs.	pound; pounds [weight]
Let	Lettish
Lev	Leviticus
LG	Low German
L.H.D	Doctor of Polite Literature
Lieut	Lieutenant
Lim	Limousin
Lin	Linnæus, Linnæan
lit	literal,-ly
lit	literature
Lith	Lithuanian
lithog	lithograph, -y
LL	Late Latin, Low Latin
LL.D	Doctor of Laws
long	longitude
Luth	Lutheran
M	Middle
M	Monsieur
m	mile, miles
m. *or* masc.	masculine
M.A	Master of Arts
Macc	Maccabees
mach	machinery
Mag	Magazine

ABBREVIATIONS.

Maj	Major
Mal	Malachi
Mal	Malay, Malayan
manuf	manufacturing, manufacturers
Mar	March
masc *or* m	masculine
Mass	Massachusetts
math	mathematics, mathematical
Matt	Matthew
M.D.	Doctor of Medicine
MD	Middle Dutch
Md	Maryland
ME	Middle English, or Old English
Me	Maine
mech	mechanics, mechanical
med	medicine, medical
mem	member
mensur	mensuration
Messrs. *or* MM	Gentlemen, Sirs
metal	metallurgy
metaph	metaphysics, metaphysical
meteor	meteorology
Meth	Methodist
Mex	Mexican
Mg	Magnesium
M.Gr	Middle Greek
MHG	Middle High German
Mic	Micah
Mich	Michigan
mid	middle [voice]
Milan	Milanese
mid. L. *or* ML.	Middle Latin, Mediæval Latin
milit. *or* mil	military [affairs]
min	minute, minutes
mineral	mineralogy
Minn	Minnesota
Min. Plen	Minister Plenipotentiary
Miss	Mississippi
ML. *or* mid. L.	Middle Latin, Mediæval Latin
MLG	Middle Low German.
Mlle	Mademoiselle
Mme	Madam
Mn	Manganese
Mo	Missouri
Mo	Molybdenum
mod	modern
Mont	Montana
Mr	Master [Mister]
Mrs	Mistress [Missis]
MS.; MSS	manuscript; manuscripts
Mt	Mount, mountain
mus	music
MUS. DOC	Doctor of Music
myth	mythology, mythological
N	Nitrogen
N. *or* n	North, -ern, -ward
n	noun
n *or* neut	neuter
Na	Sodium [*Natrium*]
Nah	Nahum
N. A., *or* N. Amer	North America, -n
nat	natural
naut	nautical
nav	navigation, naval affairs
Nb	Niobium
N. C. *or* N. Car	North Carolina
N. D	North Dakota
Neb	Nebraska
neg	negative
Neh	Nehemiah
N. Eng	New England
neut *or* n	neuter
Nev	Nevada
N.Gr	New Greek, Modern Greek
N. H	New Hampshire
NHG	New High German [German]
Ni	Nickel
N. J	New Jersey
NL	New Latin, Modern Latin
N. Mex	New Mexico
N. T.. *or* N. Test	New Testament
N. Y	New York [State]
nom	nominative
Norm. F	Norman French
North. E	Northern English
Norw	Norwegian, Norse
Nov	November
Num	Numbers
numis	numismatics
O	Ohio
O	Old
O	Oxygen
Obad	Obadiah
obj	objective
obs. *or* †	obsolete
obsoles	obsolescent
O.Bulg	Old Bulgarian or Old Slavic
Oct	October
Odontog	odontography
OE	Old English
OF *or* O. Fr	Old French
OHG	Old High German
Ont	Ontario
opt	optics, optical
Or	Oregon
ord	order
ord	ordnance
org	organic
orig	original, -ly
ornith	ornithology
Os	Osmium
OS.	Old Saxon
O. T., *or* O. Test	Old Testament
Oxf	Oxford
oz	ounce, ounces
P	Phosphorus
p.; pp	page; pages
p., *or* part	participle
Pa. *or* Penn	Pennsylvania
paint	painting
palæon	palæontology
parl	parliament
pass	passive

pathol *or* path	pathology
Pb	Lead [*Plumbum*]
Pd	Palladium
Penn *or* Pa.	Pennsylvania
perf	perfect
perh	perhaps
Pers	Persian, Persic
pers	person
persp	perspective
pert	pertaining [to]
Pet	Peter
Pg. *or* Port.	Portuguese
phar	pharmacy
PH.D	Doctor of Philosophy
Phen	Phenician
Phil	Philippians
Philem	Philemon
philol.	philology, philological
philos. *or* phil	philosophy, philosophical
phonog	phonography
photog	photography
phren	phrenology
phys	physics, physical
physiol	physiology, physiological
Pied	Piedmontese
Pl	Plate
pl. *or* plu	plural
Pl. D	Platt Deutsch
plupf	pluperfect
P.M	afternoon [*post meridiem*]
pneum	pneumatics
P. O	Post-office
poet	poetical
Pol	Polish
pol. econ	political economy
polit	politics, political
pop	population
Port. *or* Pg.	Portuguese
poss	possessive
pp	pages
pp	past participle, perfect participle
p. pr	present participle
Pr. *or* Prov.	Provençal
pref	prefix
prep	preposition
Pres	President
pres	present
Presb	Presbyterian
pret	preterit
prim	primitive
priv	privative
prob	probably, probable
Prof	Professor
pron	pronoun
pron	pronunciation, pronounced
prop	properly
pros	prosody
Prot	Protestant
Prov. *or* Pr.	Provençal
Prov	Proverbs
prov	province, provincial
Prov. Eng.	Provincial English
Prus	Prussia, -n
Ps	Psalm, Psalms
psychol	psychology
pt	past tense
pt	pint
Pt	Platinum
pub	published, publisher, publication
pwt	pennyweight
Q	Quebec
qt	quart
qtr	quarter [weight]
qu	query
q.v.	which see [*quod vide*]
R	Rhodium
R	River
Rb.	Rubidium
R. Cath	Roman Catholic
rec. sec	recording secretary
Ref	Reformed
refl	reflex
reg	regular, -ly
regt	regiment
rel. pro. *or* rel	relative pronoun
repr	representing
repub	republican
Rev	Revelation
Rev	The Reverend
Rev. V	Revised Version
rhet	rhetoric, -al
R. I	Rhode Island
R. N	Royal Navy
Rom	Roman, Romans
Rom	Romanic or Romance
Rom. Cath. Ch. *or* R. C. Ch.	Roman Catholic Church
r.r	railroad
Rt. Rev	Right Reverend
Ru	Ruthenium
Russ	Russian
r.w	railway
S	Saxon
S	Sulphur
s	second, seconds
s. [l. s. d.]	shilling, shillings
S. *or* s	South, -ern, -ward
S. A. *or* S. Amer.	South America, -n
Sam	Samaritan
Sam	Samuel
Sans. *or* Skr	Sanskrit
Sb	Antimony [*Stibium*]
s.c	understand, supply, namely [*scilicet*]
S. C. *or* S. Car	South Carolina
Scand	Scandinavian
Scot	Scotland, Scotch
scr	scruple, scruples
Scrip	Scripture [s], Scriptural
sculp	sculpture
S. D	South Dakota
Se	Selenium
sec	secretary
sec	section
Sem	Semitic
Sep	September
Serv	Servian
Shaks	Shakespeare
Si	Silicon

ABBREVIATIONS.

Sic	Sicilian
sing	singular
sis	sister
Skr. *or* Sans	Sanskirt
Slav	Slavonic, Slavic
Sn	Tin [*Stannum*]
Soc	Society
Song Sol.	Song of Solomon
Sp	Spanish
sp. gr	specific gravity
sq	square
Sr	Senior
Sr	Strontium
....	Saint
....	street
stat	statute
S.T.D	Doctor of Sacred Theology
subj	subjunctive
suf	suffix
Su. Goth	Suo-Gothic
superl	superlative
Supp	Supplement
Supt	Superintendent
surg	surgery, surgical
Surv	surveying
Sw	Swedish
Swab	Swabian
sym	symbol
syn	synonym, -y
Syr	Syriac, Syrian
t	town
Ta	Tantalum
Tart	Tartar
Te	Tellurium
technol	technology
teleg	telegraphy
Tenn	Tennessee
term	termination
terr	territory
Teut	Teutonic
Tex	Texas
Th	Thorium
theat	theatrical
theol	theology, theological
therap	therapeutics
Thess	Thessalonians
Ti	Titanium
Tim	Timothy
Tit	Titus
Tl	Thallium
toxicol	toxicology
tp	township
tr. *or* trans.	transitive
transl	translation, translated
trigon	trigonometry
Turk	Turkish
typog	typography, typographical
U	Uranium
ult	ultimate, -ly
Unit	Unitarian
Univ	Universalist
Univ	University
U. Presb	United Presbyterian
U. S.	United States
U. S. A.	United States Army
U. S. N.	United States Navy
Ut	Utah
V	Vanadium
v	verb
Va	Virginia
var	variant [word]
var	variety of [species]
Ven	Venerable
Venet	Venetian
vet	veterinary
v. i. *or* v. intr	verb intransitive
vil	village
viz	namely, to-wit [*videlicet*]
v. n	verb neuter
voc	vocative
vol	volume
vols	volunteers
Vt	Vermont
v. tr	verb transitive
W	Tungsten [*Wolfram*]
W	Welsh
W. *or* w	West, -ern, -ward
Wal	Walachian
Wall	Walloon
Wash	Washington
Westph	Westphalia, -n
W. Ind. *or* W. I.	West Indies, West Indian
Wis	Wisconsin
wt	weight
W. Va	West Virginia
Wyo	Wyoming
Y	Yttrium
yd	yard
yr	year
Zech	Zechariah
Zeph	Zephaniah
Zn	Zinc
zool	zoology, zoological
Zr	Zirconium

See also ABBREVIATIONS in Vol. I.

THE

COLUMBIAN CYCLOPEDIA.

TIN, n. *tĭn* [Sw. *tenn;* Dan. and Icel. *tin;* Ger. *zinn*, tin: W. *ystaen:* L. *stannum*]: an elementary body: a white, soft, and very malleable metal (see below); thin plates of iron covered with a coating of tin; a dish made of tinned-iron plate; in *slang*, money: V. to cover with a coating of tin; to overlay with tinfoil; to preserve in tin cases, as fruit, meat, etc. **TIN'NING**, imp.: N. the art or process of covering plates of iron, or the inner surfaces of iron or copper vessels, etc., with a coating of tin; the layer or coating thus put on; the canning of meat, fruit, etc. **TINNED**, pp. *tĭnd*, covered with tin; preserved in a tin case, as meat, etc. **TINNY**, a. *tĭn'nĭ*, abounding with or resembling tin: N. in *Scot.*, a cup made of tinned sheet-iron. **TIN'NER**, n. *-nér*, one who works in a tin-mine; a tinsmith. **TIN'FOIL** [L. *folium*, a leaf]: tin in thin leaves. **TIN'MAN**, one who makes or sells articles made of tinned sheet-iron. **TIN-MINE**, a mine producing tin ore. **TIN-PLATE**, thin sheets of iron coated with tin (see below). **TIN PYRITES**, a sulphuret of tin, copper, and iron—a mineral of a steel-gray or sometimes of a copper-yellow color. **TINSMITH**, one who manufactures articles of tinned sheet-iron. **TIN-STONE**, or **-ORE**, the oxide of tin or *cassiterite*, the ore from which the tin of commerce is obtained. **TIN-TYPE**, a photograph taken on tin. **TIN-WARE**, iron articles coated with tin; utensils made of tin-plate. **BLOCK-TIN**: see under **BLOCK**. **STREAM-TIN**, the gravel-like tin ore found with detritus in the gullies and water-courses of metalliferous districts.

TIN (symb. Sn, at. wt. 118, sp. gr. 7·3): a silvery-white metal, with a tinge of yellow, and high metallic lustre. It possesses a crystallized texture, and may be obtained in well-formed crystals of the pyramidal or tetragonal system; and because of this crystalline texture a bar of tin, when bent, emits a creaking sound, termed the *cry* of tin (the *Zinngeschrei*, or tin-shriek of the Germans). Tin is a soft metal—being softer than gold—and is very malleable, and can be beaten out into very thin laminæ, in which form it is known as *tinfoil*. At temperature of about 212° F. its ductility is considerable, but not remarkable, and it may be then easily drawn into wire of moderate tenacity—a wire with diameter 0·17 of an inch being broken by a weight of about 50 lbs. It is a moderately good conductor of heat and electricity, and when handled communicates a peculiar odor to the skin. At ordinary temperatures, it is very slightly acted on by exposure to the air, or to moisture, or to both. At the temperature of 392° F. it becomes so brittle that it may be powdered; it melts at 455° F.; heated above melting point, it oxidizes rapidly, being converted into dioxide, a whitish powder called 'putty-powder,' used in the arts for polishing. T. is attacked and dissolved by hydrochloric acid, with evolution of hydrogen; by nitric acid it is converted into a white hydrate of the dioxide.

There are two principal oxides of tin—the monoxide or Stannous oxide, SnO or Sn_2O_2, and the dioxide or Stannic oxide, SnO_2: there is also a sesquioxide, Sn_2O_3 or $SnO.SnO_2$.

The monoxide of T., or stannous oxide, SnO, is produced by heating stannous oxalate in a closed vessel, or by igniting stannous hydrate: the hydrate, $2SnO.H_2O$, is obtained as a white precipitate by decomposing stannous chloride with an alkaline carbonate, carbon dioxide being at the same time evolved. The monoxide acts as a base, forming salts which are colorless, redden litmus, and are for the most part soluble in water, from which crystalline tin is deposited on an inserted mass of zinc, constituting the so-called *Tin Tree.* None of these salts are of special importance. *Dioxide of T.*, or stannic oxide, SnO_2, occurs native in the anhydrous form, crystallizing in square prisms sufficiently hard to scratch glass, and generally of brown color from the presence of peroxide of iron or of manganese. It forms two hydroxides: Stannic acid $SnO_2.H_2O$, and Metastannic acid, $Sn_5O_{10}.5H_2O$. *Stannic acid* is precipitated by acids from solutions of alkaline stannates, and from solution of stannic chloride by calcium or barium carbonate. It dissolves in the stronger acids, forming the stannic salts: thus with sulphuric acid it forms stannic sulphate, $Sn(SO_4)_2$. With the alkalis, stannic acid forms easily soluble salts, from which the insoluble stannates of the earth-metals and heavy metals may be obtained by precipitation. The stannate of sodium, Na_2SnO_3, is used as a mordant in calico-printing. *Metastannic acid* is produced by action of nitric acid on tin. Dried in air at common temperatures, its composition is $5SnO_2.10H_2O$; but at 212° F. it gives off 5 molecules of water, and is reduced to $H_{10}Sn_5O_{15}$. It is a white crystalline powder insoluble in water and in acids; dissolves slowly in alkalis, forming the metastannates, e.g., Potassium metastannate, $K_2H_8Sn_5O_{15}$, and Sodium metastannate, $Na_2H_8Sn_5O_{15}$. The metastannates exist only in the hydrated state, being decomposed when deprived of their basic water.

There are two chlorides of T.—viz., a dichloride and a tetrachloride. The *Dichloride of T.*, or stannous chloride, $SnCl_2$, may be obtained in a hydrated form by dissolving the metal in hot hydrochloric acid, and evaporating the solution, when the salt crystallizes in prismatic needles, having the composition $SnCl_2 2H_2O$. The hydrated protochloride is used as a mordant, and for deoxidizing indigo and the peroxides of iron and manganese, by the dyer and calico-printer; and for its deoxidizing or reducing powers, it is sometimes employed in analytical chemistry, especially in determination of the quantity of mercury, since all the mercurial salts, when boiled with it, are decomposed, and yield their mercury in the metallic form. *Tetrachloride of T.*, or stannic chloride, $SnCl_4$, forms, with the chlorides of the alkali metals and alkaline earth-metals, crystalline double salts, called *Stannochlorides* or *Chlorostannates*, e.g., $SnCl_4.2NH_4Cl$; $SnCl_4.BaCl_2$, etc.; the compound of this nature which it forms with chloride of ammonium is represented by the formula $CnCl_4.2NH_4Cl$, and is employed by the dyer under the technical term *Pink Salt*. An impure tetrachloride, prepared by dissolving T. at a gentle heat in a mixture of nitric acid and sal-ammoniac, and known in the trade as *Nitromuriate of Tin*, or *Composition*, is also largely used by dyers and calico-printers. Trichloride of gold, added to dilute solution of stannous chloride, produces a brownish-purple precipitate known as *Purple of Cassius*.

The sulphides of T. are three—the monosulphide, the sesquisulphide, and the bisulphide. The *Bisulphide of T.* SnS_2, may be obtained in the hydrated state, in the form of a dingy yellow precipitate, by passing hydrogen sulphide through a solution of stannic chloride. In the dry way, it is procured in the form known as Mosaic Gold, which is insoluble in any acid, though soluble in aqua regia; and is employed in the arts to give an appearance of bronze to the surface of metals.

Reduction and Manufacture.—Tin must have been one of the metals earliest known, as it enters into the composition of Bronze (q.v.), of which the most ancient metallic weapons and tools were made. Tin and oysters were the earliest products for which Great Britain was famous. Tin is still largely obtained in Cornwall; and from that locality the Phœnician navigators took it to Tyre and Sidon. To this day, England is by far the greatest tin-producing country, having raised (1894) over 13,700 tons of dressed ore, or 8,800 tons of the metal. Minor T. ore deposits in Europe exist in the Erzgebirge (Germany), Brittany (France), Galicia (Spain). Also, in the Malay peninsula and in Queensland and New S. Wales (Australasia), in Bolivia and Peru (S. America), and in the region of the Black Hills (United States), T. ore is found.

In the report of the Geological Survey office on the mineral resources of the United States, 1888, the following analyses of different tin ores are given.

I. CASSITERITE FROM THE BLACK HILLS, DAK.

Mines.	Stannic Oxide.	Insoluble.	Specific Gravity.
Occidental	96·42 = 75·86 tin	8·58	6·923
Tin Mountain	97·5 = 76·7 tin	...	6·923
First Find	94·70 = 74·5 tin	...	6·728

II. COMPARATIVE ANALYSES OF CASSITERITE.

Localities.	Stannic Oxide.	Specific Gravity.
	Per cent.	
Finbo, Sweden	93·6	...
Wicklow, Ireland	95·26	6·75
Xeres, Mexico	89·43	6·862
Tipuani, Bolivia	91·80	7·021
Zinnwald	88·04	...
California	76·15	...
Cornwall	98·93	...
Schlackenwald	99·28	...

There is but one ore of tin of any importance—viz., the dioxide, or stannic oxide, SnO_2, which in its pure state consists of tin 78 and oxygen 22: it is called Tin-stone or Cassiterite. Tin ore has nothing remarkable in its appearance; it is of various colors—e.g., gray, various shades of yellow and red, and black. Its specific gravity—a notable feature—is 6·9; and it strikes fire with steel. In Cornwall, the tin ore occurs in mineral veins running through granite and slate rocks, or scattered in crystals through their mass. The tin-stone obtained from the veins or lodes is called *Mine-tin;* that procured by washing alluvial deposits is called *Stream-tin*—the latter is the result of disintegration of granite and other rocks which contained veins of tin. Washed Cornish tin ore, usually called 'black tin,' produces on an average about 67 per cent. of metallic or 'white' tin. Tin pyrites, or sulphide of tin, is found in some of the Cornish mines, but it is of little importance commercially. Ores containing copper are sometimes found with so large proportion of tin that it is difficult to say whether they should be regarded as tin or copper ores.

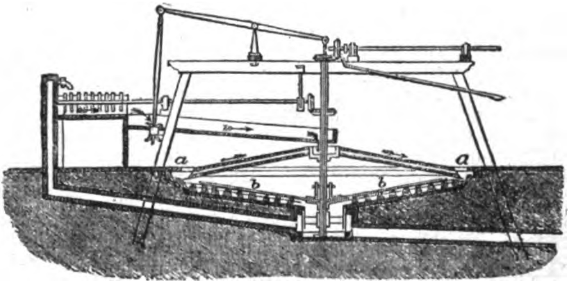


Fig. 1.

The dressing of tin ore obtained from the mine is a difficult and delicate operation. It is so much dispersed through the gangue that it requires to be stamped to a very fine powder (for the apparatus, see METALLURGY) before the metallic particles can be effectually separated. In some mines, the proportion of oxide to the rest of the material is not so much as 10 lbs. to the ton.

The stamped ore is copiously supplied with water passed through a grating adjoining the stamps, and conveyed into a channel where there are two pits. The purer and heavier portion falls into the first, and is called the *crop;* the remainder, called the *leavings*, passes through the first, and is retained in the second pit. Repeated washings are now necessary to separate as thoroughly as possible the impurities from the ore, and for this purpose a machine called a *buddle* is largely employed. Various kinds of apparatus are used, but they are similar in principle to the jigging sieve and sleeping table (see METALLURGY). The form of buddle, known as 'Borlase's Buddle,' effects a saving of about 80 per cent. Figs. 1 and 2 show this machine. The ore and earthy matters, in the state of thick mud, are conveyed by square pipes or channels to the circumference *a*, *a*, around which, by aid of water, the metallic portion separates, while the lighter stony impurities flow toward the centre, and are carried away. There are brushes at *b*, *b*, for agitating the ore during the operation. In the older form of buddle, this action is reversed, and the machine, instead of being depressed, is raised in the centre.

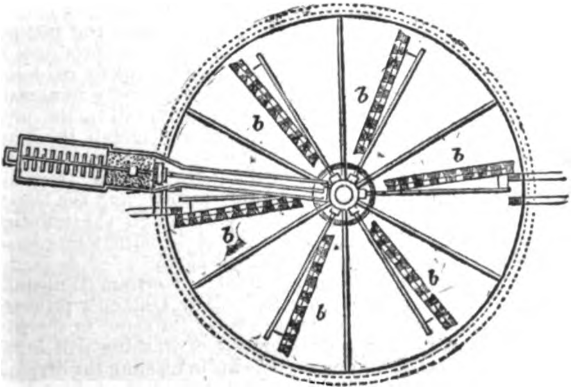


Fig. 2.

The tin ore thus far purified has next to be deprvied of its sulphur and arsenic; this is done in a Reverberatory Furnace (q.v.), the flues of which are connected with large condensing chambers, in which the arsenic is deposited in a crystalline from (see ARSENIC), and is afterward resublimed, to form the white arsenic of commerce. The sulphur, present in the state of sulphide of iron, is decomposed by the heat into sulphurous acid gas, and the remaining oxide of iron is removed by a subsequent washing. Sulphide of copper, when present, is converted by roasting, and afterward exposing it to the air, into sulphate of copper, and is then easily dissolved out by lixiviation.

After this final washing, the ore is ready for smelting in a reverberatory furnace. The charge consists of from 20 to 25 cwts. of ore mixed with one-sixth of its weight of powdered anthracite or charcoal, and a small quantity of lime or fluor-spar, to serve as a flux for the siliceous impurities. Before being put into the furnace the mixture is moistened with water, to prevent the finely powdered ore being carried away by the draught. When the charge is placed on the hearth of the furnace, the doors are closed, and the heat gradually raised for about six hours; the oxide is then reduced by the carbon of the coal. At this stage, the furnace-door is opened, and the mass worked with a paddle, to separate the slag, which is raked off, and the richer portion of it melted over again. The reduced tin subsides to the bottom, and is run off into a cast-iron pan, from which it is ladled into molds, to produce block or ingots of convenient size.

The tin has still to be purified, first by a process of *liquation*, and afterward by that of *boiling*. 'Liquation' consists in moderately heating the blocks in a reverberatory furnace till the tin, owing to its comparatively easy fusibility, melts, and flows into the refining-basin, leaving on the hearth of the furnace a residuary alloy of tin with iron and other metals. More blocks are added, and heated in the same way, till the refining-basin contains about five tons. The tin is then ready for 'boiling.' In this operation, billets of green wood are plunged into the melted metal, the disengagement of gas from which produces a constant ebullition, and so causes a scum (chiefly oxide of tin) to rise to the surface, which is then easily removed; at the same time, impure and dense parts fall to the bottom: when the agitation has gone on long enough, the bath is allowed to settle and cool. The tin then separates into zones—the upper consisting of the purest portion; the middle being slightly mixed with other metals; and the lower so much so, that it requires to go through the refining process again. The residuary alloy of the liquation process has also its tin extracted and refined again.

Tin ores which contain the mineral wolfram (tungstate of iron and manganese) are treated by Oxland's process. This mineral and tin ore are so nearly the same in specific gravity, that no mechanical process of washing will separate them. Oxland's process consists in roasting the dressed tin ore with sodium sulphate to convert the insoluble tungstate of iron and manganese into the soluble tungstate of sodium, which is easily removed by lixiviation. The oxides of iron and manganese, which are left in finely-divided state, can then, from their lower density, be readily removed by washing. The tungstate of sodium procured in the operation has been found one of the most valuable substances for rendering cotton cloths non-inflammable.

Tin when heated to nearly its melting-point becomes brittle, and can then be broken into prismatic fragments called *dropped* or *grain tin*. The metal which is susceptible of this change may be considered of fine quality, as impure tin does not become brittle when so treated. The peculiar properties of tin, especially its malleability, its brilliancy, and the slowness with which it oxidizes at common temperatures in the atmosphere, render it of great service in the arts. Utensils coated with silver require six cleanings for one that would suffice with 'tinned' vessels. Tin is consequently largely used to coat the surface of other metals, as iron and copper, especially thin sheet-iron to form tin-plate.

With other metals tin forms some valuable alloys: see ALLOY. An amalgam of tin and mercury forms the metallic coating of mirrors. Tin-foil, $\frac{1}{1000}$ of an inch thick, is used for various purposes, and contains 96 to 98·5 per cent. of tin, with small proportions of copper, lead, iron, and sometimes nickel. The import of T. into the United States (1890), in tin bars, blocks, pigs, grain, and granulated, was 34,993,099 lbs., value $6,898,909.

TIN-PLATE.—This manufacture forms a branch of the iron trade. The art of tinning plate-iron is said to have been invented in Bohemia, about the beginning of the 16th c., though the tinning of copper was practiced earlier; tin-plate was made in England, first about 1670.

Sheet-iron for tin-plates is made either of charcoal-bar or coke-bar, which has been rolled with particular care, to avoid scales on the surface. Before tinning, the plates are called 'black plates.' When the iron has been cut to the required size, the plates are 'pickled'—i.e., immersed in hot sulphuric or hydrochloric acid diluted with 16 parts of water to 1 of acid, the use of the acid being to remove all oxide. After this, the plates require washing several times in water; then follows an annealing in closed cast-iron boxes in a reverberatory furnace. The next operation consists in passing the plates two or three times between chilled iron rollers highly polished with emery and oil, to give the plates a polished surface. Once more they are sent to the annealing furnace; passed again through dilute sulphuric acid; then again washed, but this time in running water; and then scoured with sand. This should leave them clean and bright for the tinman.

Each plate is now put singly into a pot of melted grease (which has become sticky by use), and left till it is completely coated, after which the plates are taken in parcels and plunged into a bath of melted tin covered with grease, called the 'tin-pot.' They pass from this to another vessel, with two compartments, called the 'wash-pot,' both of which contain melted tin of the purest quality, and, like the last, covered with grease. The plates are put into the first compartment in parcels, where they receive a coating of purer tin than that of the 'tin-pot,' and are then withdrawn one by one, and wiped on both sides with a hemp brush; the marks of which are obliterated by another dipping in the second compartment of the 'wash-pot.' This last dipping also gives the plates a polish. Next is the removal of the superfluous tin by immersing the plates in a pot containing tallow and palm-oil, maintained at a temperature no higher than will keep in liquid state the tin in contact with the oil, and so allow it to run off. The final treatment consists in working the plates separately in troughs of bran with a little meal, and then rubbing them with flannel.

There is a variety of tin-plates called 'terne-plates,' coated with alloy of tin and lead, in which the proportions vary from one of lead and two of tin to two of lead and one of tin. They are used for roofing.

Upon the enactment of the McKinley Tariff Act, the manufacture of terne-plates, or at least the 'dipping' of 'black plates,' whether of home or foreign manufacture, sprang up in the United States. Tin-plate proper also is now manufactured in quantity in the United States. The import of T.-plate into the United States in the fiscal year ended 1893 was 255,485 gross tons. The product of T.-plate in the United States (1893) was 123,606,707 lbs.—Import (1896) 24,976 tons.

TINCAL, n., or **Tinkal**, n. *tĭng'kăl* [Mal. *tingkal:* Pers. *tinkar*]: crude Borax (q.v.).

TINCHEL, n. *tĭn'chĕl* [Gael. *timchioll*, a circuit, a compass]: in *Scot.*, a large number of sportsmen who, having surrounded an extensive space, gradually close in upon their game; also **Tin'chill**, *-chĭl.*

TINCT, v. *tĭngkt* [L. *tinctus*, pp. of *tingĕrĕ*, to color]: in *OE.*, to color; same as Taint (q.v.): Adj. in *OE.*, colored; stained: N. in *OE.*, color; stain.

TINCTURE, n. *tĭngk'tūr* [L. *tinctūra*, a dyeing; *tinctus*, pp of *tingĕrĕ*, to dye: It. *tintura;* F. *teinture*, dye, tincture]: the color with which anything is impregnated; a tinge of color; tint; hue; in *her.*, one of the colors used in achievements (see Heraldry); a slight taste or quality added to anything: a liquid extract; in *med.*, a solution, generally in spirit, of the active principles of any substance (see below): V. to impregnate with any foreign matter; to communicate a portion of anything foreign; to imbue the mind. **Tinc'turing**, imp. **Tinc'tured**, pp. *-tūrd.* **Tinctorial**, a. *tĭngk-tō'rĭ-ăl*, containing or imparting color.

TINCTURE: commonly, alcoholic solution of vegetal, animal, or some saline substances; sometimes ammonia is added to the alcohol—when the solution is known as *ammoniated tincture;* solutions in water and in ether are also prepared, known as *aqueous tinctures* and *ethereal tinctures.* The alcohol employed in preparing tinctures is either the rectified spirit (*U. S. Pharmacopœia*), having specific gravity 0·835, or proof-spirit, specific gravity 0.941. Tinctures made with 0·835 spirit (pure alcohol) are precipitated by water, and therefore are seldom used internally; those prepared with proof spirit are commonly employed as infusions, decoctions, etc. Full directions for making tinctures are found in the *U. S. Pharmacopœia* in all its editions.

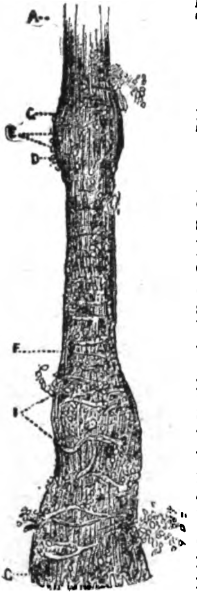
TIND, v. *tĭnd* [AS. *tendan;* Dan. *tænde;* Sw. *tända*, to kindle (see also Tinder)]: in *prov. Eng.* and *OE.*, to light or kindle.

TIN'DAL, Matthew: English deistical writer: 1656-1733, Aug. 16; son of a clergyman at Beer-ferris, in Devonshire. He was educated at Lincoln and Exeter colleges, Oxford; took the degree B.A. 1676; and soon afterward was elected fellow of All Souls' College. In 1685 he became a doctor of law; and after a brief lapse into Romanism, during the reign of James II., reverted to Protestantism, or rather, as events showed, into rationalism. His first work was *An Essay concerning Obedience to the Supreme Powers*, etc. (Lond. 1693), followed by *An Essay concerning the Laws of Nations and the Rights of Sovereigns;* but it was not till 1706 that he attracted much notice, when the publication of his treatise on *The Rights of the Christian Church asserted against the Romish and all other Priests who claim an independent power over it; with a Preface concerning the Government of the Church of England, as by Law established*, raised a storm of opposition. A torrent of replies and refutations poured from the press. Among those who signalized themselves as adversaries of T., the least obscure were Dr. G. Hickes and Conyers Place: Swift also indulged in some 'Remarks.' On the continent, T.'s work was favorably received. Le Clerc, in *Bibliothèque Choisie*, praises it highly, as one of the solidest defenses of Protestantism ever written. In 1730, when T. had nearly reached the age of 73, he published his most notable and popular treatise, *Christianity as Old as the Creation, or the Gospel a Republication of the Religion of Nature.* The design of the work, which is written in excellent English, is to strip religion 'of the additions which policy, mistake, and the circumstances of the time have made to it'—in other words, to eliminate the supernatural element of Christianity, and to prove that its morality, which is admitted to be worthy of an 'infinitely wise and good God,' is its true and only claim to the reverence of mankind. His argument is based on a pure assumption—that the true religion, being from God, must therefore necessarily be eternal, universal, simple, and perfect, and can consist of nothing but the practice of morality. In Christianity as the true religion, reason must be supreme above all positive revelation whether of doctrine or precept. The argument takes no note whatever of the historical facts in man's religious development. T.'s purpose was rather constructive than destructive; and he called himself a 'Christian Deist.' He was answered by Dr. Waterland, Foster (eminent dissenting minister), Dr. Conybeare (afterward bp. of Bristol), and Dr. Leland (q.v.), with various degrees of ability and success.

TINDER, n. *tĭn'dėr* [Sw. *tundra*, to sparkle; *tunder*, tinder: Icel. *tendra*, to light a fire; *tundr*, tinder: Ger. *zunder*, tinder; *anzünden*, to kindle: comp. Gael. *teine*, a fire]: any very inflammable material, usually partially burnt linen, used for obtaining fire by striking a spark among it by means of a flint and steel, formerly one of the chief means of procuring fire before the introduction of Matches (q.v.). Partially decayed wood, especially that of willows and other similar trees, also affords tinder: and certain fungi furnish the German tinder, or amadou (see **Amadou**: **Punk**: **Spunk**). **Tin'dery**, a. -ĭ, or **Tinder-like**, a. like tinder; inflammable. **Tinder-ore**, an impure arsenical sulphide of antimony and lead, occurring in soft flexible flakes resembling tinder, of a dirty-reddish color.

TINE, n. *tīn* [Icel. *tindr;* Sw. *tinne,* the tooth of a rake or harrow: Ger. *zinne;* Dan. *tinde,* a pinnacle: Dan. *tand,* a tooth: allied to Tooth]: the point of the fork of a deer's horn; one of the spikes of a fork or of a harrow; a prong. **Tined**, a. *tīnd,* furnished with tines.

TINE, v. *tīn* [see Tind]: in *OE.*, to kindle; to burn; to rage; to smart. **Tī'ning**, imp. **Tined**, pp. *tīnd.*



Fungus in *Tinea decalvans:*

AF, lower part of an affected hair, highly magnified; FG, its root; C, spheroidal swelling due to accumulation of spores, E, between the longitudinal fibres of the hair; D, rupture of long fibres; I, sporules and tubes of the parasite; II, a group of sporules proceeding from G, the ruptured root.
(From Aitken's *Science and Practice of Medicine.*)

TINE, n. *tīn* [see **Teen** 1]: in *OE.*, trouble; distress.

TINE, v. *tīn* [Icel. *tyna,* to lose]: in *Scot.*, to lose or be lost; also spelled **Tyne**.

TINEA, n. *tĭn'ĕ-ă* [L. *tĭnĕa,* a gnawing worm]: a parasitic disease of the skin, and especially of the scalp. For three of the most important varieties of T., viz., *T. circinatus* (ringworm of the body), *T. tonsurans* (ringworm of the scalp), and *T. sycosis* (ringworm of the beard), see **Ringworm**. In these three varieties, included in the gengeneral term *T. tondens,* the vegetable parasite known as *Trichophyton tonsurans,* figured in the above article, is always present.—It remains to notice the *Tinea decalvans* of Bateman, known also as *Porrigo decalvans, Alopecia circumscripta,* etc. It is defined by Aitken as 'a fungus disease, causing the formation of rounded or oval patches of baldness, sometimes solitary, more generally multiple. It affects the hairy scalp principally; but the beard and hairy portion of the skin may also suffer.' The fungus which causes these patches of baldness was detected by Gruby 1843, and named the *Microsporon Audonini:* it differs from the *Trichophyton* by its numerous waved filaments and the extremely small size of its sporules, likewise by its position, not being found in the interior of the root of the hair, but forming a little tube round each hair, and thus causing it to soften and break down. The hairs thus affected become dull and partially loose; the skin in which they are implanted becomes red, swollen, and slightly itchy; and a whitish matter (sporules of the fungus) may soon be observed on the diseased skin and hairs. The hairs then suddenly fall off from the affected part, leaving a round bald patch of very white color. The disease is capable of transmission from one person to another, though less readily than *Tinea tonsurans*. It affects children chiefly. The treatment consists in preventing the spread of the disease by extracting the hairs round the circumference of the patch and washing the head daily with soft soap; and all the young hairs within the patch must be extracted till a healthy crop begins to appear. Moreover, a solution of sulphurous acid, as recommended for ringworm, should be applied. When by these means the fungus has been destroyed, stimulants must be applied to the bald patches A mixture of equal parts of *Collodium* and of *Ether cantharidalis* (*Collodium vesicans*) has been recommended for stimulant in these cases.

TINEIDÆ, *ti-nē'i-dē:* family of small moths, smallest insects of the lepidopterous order. The body is long and slender, wings entire, often narrow, mostly convoluted in repose. Many of them are very brilliantly colored, exhibiting beautiful little stripes and patches of gold and silver. Many deposit their eggs in animal substances, on which the larvæ feed, making cases for themselves out of the substance that they feed on. The Clothes-moths (q.v.) are a familiar example.

TINFOIL: see under TIN.

TING, n. *ting* [imitative of the sound]: the sharper sound of a bell—the deeper tone is called TONG, and the combination is TING-TONG, usually spelled DING-DONG (q.v.).

TING: for THING, which see.

TINGE, v. *tinj* [L. *tingo*, I moisten, I dye: F. *teindre*, to dye or color]: to color or stain; to impregnate slightly with something foreign; to dye; to communicate in a slight degree the taste or qualities of a substance: N. a slight degree of color or taste derived from some other substance. TING'ING, imp. TINGED, pp. *tinjd*.

TINGI, *ting'gi* (*Magonia glabrata*): tree of nat. order *Sapindaceæ*, which covers large tracts of country in parts of Brazil, excluding almost everything else, growing usually to the height of 30 or 40 ft., sometimes much higher. An infusion of the bark of the roots is used to poison fish. The fruit is a large dry triangular capsule, filled with broad flat seeds, from which a kind of soap is made. The membrane which covers the cotyledons is stripped off, and they are steeped in water till they begin to swell and soften, and boiled with a little tallow. A homogeneous mass is formed, which is used for washing clothes.

TINGLE, v. *tĭng'gl* [imitative of the sound of a small bell, represented in different languages by the syllables *tin, ting, tink, tang, twang:* L. *tinnīrĕ*, to ring: F. *tinter*, to ring, to tingle; *tinton*, the ting of a bell: Dut. *tintelen*, to tingle as with cold]: to feel a prickling or stinging sensation, generally disagreeable and painful, but sometimes imparting a degree of pleasure; to tinkle. TIN'GLING, imp. *-glĭng:* N. a thrilling sensation; a noise in the ears. TINGLED, pp. *tĭng'gld.*

TINKAL, n. *tĭng'kăl:* see TINCAL.

TINKAR'S ROOT, *tĭng'kârz rôt* (*Triosteum perfoliatum*): shrubby plant of nat. order *Caprifoliaceæ*, native of N. America. Its root is used as an emetic and mild cathartic. It is named from a physician who brought it into notice.

TINKER, n. *tĭng'kėr* [imitative of the *tinking* or clinking sound of working or hammering metal: probably Scot. *tink*, to rivet, the noise so made: W. *tincerdd*, a tinker; *tincian*, to tinkle]: a mender of pots and pans, especially such as are made of tin-plate; any mender or botcher: V. to work as a tinker; to patch up coarsely; to cobble; to botch. TIN'KERING, imp.: N. the employment of a tinker; the act of patching up coarsely. TIN'KERED, pp. *-kėrd.*

TINKLE, v. *tĭng'kl* [imitative of the sound of small bells (see TINGLE)]: to make or give out a succession of small, quick, sharp sounds, as of little bells or pieces of metal; to cause to clink; to tingle: N. a clink; a sharp quick noise. TIN'KLING, imp.: ADJ. making a sharp quick noise: N. a small, quick, sharp sound, as of a small bell. TINKLED, pp. *tĭng'kld.*

TINNÉ, *tĭn-nā':* name given to a group of aboriginal tribes in the region between Hudson Bay and the centre of Alaska. They are of the Athabascan family; are of tall stature and have some beard; their complexion is dark and their faces full. Their weapons are exceedingly primitive, made of stone and of bone. The T. are hunters and fishers.

TINNED, TINNER, TINNING, TINNY: see TIN.

TINNEVELLY, *tĭn-nē-vĕl'lē* (*Tiru-nel-véli*): chief town of the Brit. dist. of T.; near the river Chindinthoora, 350 m. s.w. of Madras. The town of T. is connected with the town and military station of Pallamcottah, on the opposite bank of the river.—Pop. (1881) 23,221.

TINNITUS AURIUM, *tĭn-nī'tŭs aw'rĭ-ŭm* [Latin]: ringing in the ears. In most cases it is an unimportant symptom, depending on some local temporary affection of the ear, or on some disturbance of the digestive system with which the part of the brain from which the auditory nerve springs sympathizes, or which excites the cerebral circulation (as often occurs in the morning after too liberal evening potations); but as it is also a common symptom of organic disease of the auditory nerve, it may indicate a dangerous condition, or may be a prelude to complete deafness. Hence, though commonly of no consequence, if permanent, it should be carefully watched. It may be induced for a few hours by a large dose of quinia.

TINOS, *tē'nos,* or **Tino,** *tē'nō* (anc. *Tenos*): island in the Grecian archipelago, belonging to the group of the Cyclades; s.e. of the island of Andros, 53 m. off the coast of Bœotia; 18 m. long, 8 m. in extreme breadth; 70 sq. m. The Tenians were conspicuous among anc. Greeks for their industry, and still maintain that pre-eminence. The island is carefully cultivated, well-watered, has a delightful climate, and is very productive in silk, wine, barley, and fruits. Silk gloves and stockings are manufactured; and the inhabitants are famous workers in marble, which is found in the island. In the modern town of Tenos, or St. Nicholas, is a cathedral of white marble, a favorite resort for pilgrims.—Pop. about 13,000.

TINSEL, n. *tĭn'sĕl* [OF. *estincelle;* F. *étincelle,* a sparkling, a spangle—from L. *scintilla,* a spark]: a loose tissue interwoven with shining thread of silver or gold—used largely for theatrical purposes, and in embroidery, etc.; something very shining and gaudy; something showy, or having a false lustre, but without value: **Adj.** gaudy; showy to excess; superficial: V. to adorn with something glittering, but not of much value; to make gaudy. **Tin'selling,** imp. **Tin'selled,** pp. *-sĕld.*

TINSEL, n. *tĭn'sĕl* [Scot. *tine, tyne,* to lose (see **Tine** 4)]: in *Scot.,* loss. **Tinsel of the feu,** in *Scots law,* forfeiture of a feu-right owing to non-payment of feu-duty for two whole years: see **Feu.**

TINT, n. *tĭnt* [L. *tinctus,* pp. of *tingĕrĕ,* to color, to tinge: It. *tinta;* F. *teint,* dye, hue]: a slight coloring distinct from the ground or principal color; a shade; a hue of color; the different degrees of intensity and strength of color in a pigment: V. to give a slight coloring to. **Tint'ing,** imp.: N. a forming or imparting of tints. **Tint'ed,** pp.: **Adj.** slightly stained or dyed; tinged. **Tint'less,** a. *-lĕs,* having no color.

TINTERN AB'BEY, *tĭn'tėrn:* famous ecclesiastical ruin on the right bank of the Wye, in Monmouthshire, England; about 9 m. s.s.e. of Monmouth. The Abbey—properly so called—was founded 1131 for Cistercian monks, by Walter de Clare, and dedicated to St. Mary; but in the previous century a church had been built: mass was celebrated by abbot and monks first in 1268. The style of architecture is a transition from Early English to Decorated, and is very fine. Most of the building, except the roof and tower, remains. T. A. owes not a little of its celebrity to Wordsworth's poem, *Lines composed a few Miles above Tintern Abbey, on revisiting the Banks of the Wye*—though the Abbey is not mentioned or alluded to in the poem.

TINTINNABULAR, a. *tĭn'tĭn-năb'ū-lėr,* or **Tin'tinnab'ulary,** a. *-lėr-ĭ* [L. *tintinnab'ŭlum,* a bell—from *tintinnārĕ,* to ring, to jingle: an imitative word]: relating to or connected with a bell; making the sound of a bell. **Tin'tinnab'ulant,** a. *-ū-lănt,* same as **Tintinnabular.** **Tin'tinnab'ula'tion,** n. *-lā'shŭn,* a tinkling sound as of a bell.

TINTORETTO, *tĭn-to-rĕt'to* (real name, Jacopo Robusti, *yâ'ko-pō rō-bôs'tē*): Venetian historical painter, called T. (Little Dyer) from his father's occupation as dyer (*Tintore*): 1518, Sep. 16—1594, May 31 (according to dates in the register of deaths in S. Marciliano); b. Venice. He studied for a few days under Titian, but appears to have been mostly self-taught. His assiduity, when young, in acquiring a varied knowledge of the human figure under all possible aspects of light and shade, commands respect, in spite of the theatrical means to which he often resorted: and the rapidity of his pencil (which got him the name *Il Furioso*) is astonishing. Sebastian del Piombo remarked that T. could paint as much in two days as he could do in two years. A catalogue of T.'s works, specimens of which are in almost all galleries, is impossible within our limits: the following are a few of the more famous: *Belshazzar's Feast, and the Writing upon the Wall* (fresco, for the Arsenal at Venice), *The Tiburtine Sibyl*, *The Last Supper, and the Washing of the Disciples' Feet*, *A Crucifixion*, *The Worship of the Golden Calf*, *The Last Judgment* (the last two immense pictures 50 ft. high and splendid in conception), *St. Agnes restoring to Life the Son of a Prefect*, *The Miracle of St. Mark*, a *Resurrection of Christ*, *The Slaughter of the Innocents*, and a grand picture of *Paradise*—84 ft. high by 74 long, with more than 100 figures, reputed the largest picture ever painted on canvas. Some of T.'s earlier pictures are carefully finished; but his later ones are dashed off with a fatal haste, that justifies the remark of Annibal Caracci that, if he 'was sometimes equal to Titian, he was often inferior to Tintoretto.' T. lavishly indulged in *chiaro-oscuro*, but his coloring is not gay or brilliant; it is rather cold and leaden, as might be expected of a painter who, when asked what were the prettiest colors, replied; 'Black and white.' He was never precise, often incorrect as judged by the standards; but was among the most original, audacious, and imaginative of painters.

TINY, a. *tī'nĭ* [imitative of making the voice pipy to express something very small: Gael. *tana*, thin, slender: Dan. *tynd*, thin]: very small; little; puny. **Ti'nier**, compar. *-ėr*. **Ti'niest**, superl. *-ĕst*.

TIP, n. *tĭp* [Dut. *tip*, a point: Ger. *zipfel*, a tip, a corner: Icel. *toppr;* Dan. *top*, top, summit]: the point or extremity of anything small, as of the finger or tongue; the end; a light quick movement; a slight blow; in *slang*, a hint; a small present in money: V. to form a point to; to cover on the top or end, as to *tip* with gold; to strike lightly; in *slang*, to give a hint or wink; to make a present in money. **Tip'ping**, imp.: N. in *music*, a distinct articulation given to the flute by striking the tongue against the roof of the mouth. **Tipped**, or **Tipt**, pp. *tĭpt*, having the top or end covered. **Tip-cat**, n. game in which a small piece of wood tapering to a point at each end, and called a cat, is made to rebound from the ground by being struck on the tip with a stick. **Tipstaff**, n. a staff tipped with metal; an officer who bears a staff tipped with metal; a constable—plu. **Tipstaves**. **Tip'ster**, n. *-stėr*, in *sporting slang*, one who supplies tips or information regarding races; a sporting prophet. TIPTOE, n. the point of the toe. ON THE TIPTOE OF EXPECTATION, eagerly alive in regard to the coming or happening of something. ON THE TIP OF THE TONGUE, on the point of being uttered. TIPTOP, a. highest; supreme; superb: N. the highest or utmost degree; the extreme. To TIP THE WINK, in *slang*, to intimate to another by means of a wink. To TIP OVER, or To TIP UP, to overturn lightly. To TIP OFF, to drink all up at one gulp.

TIPPECANOE, *tĭp-ė-ka-nô'*, RIVER: stream in Indiana, rising in T. Lake in the n. part of the state, flowing s.w. 200 m., and emptying into the Wabash 9 m. above Lafayette. It is famous for the battle on its banks.—The BATTLE OF TIPPECANOE, 1811, Nov. 5, was fought by Gen. William H. Harrison against the Indians under Tecumseh's brother, the prophet. Tecumseh himself was absent from the tribe, attempting to form an alliance with tribes further s. for hostilities against the whites. Gen. Harrison distrusted the 'prophet,' and thought it better to build a milit. post near T., the 'prophet's' village, than to carry out the plan of the govt. and forcibly seize the Indian leader. He built a fort near the site of Terre Haute in Oct., and, leaving a garrison there, marched toward T. When within 1½ m. of the Indian village, he was met by messengers from the 'prophet' demanding a parley, and a council was proposed for the next day While the army of 300 regulars and 500 militiamen were sound asleep, the Indians suddenly attacked the camp at 4 o'clock in the morning. A desperate fight ensued, lasting till daylight; and the Indians were finally defeated, and were dispersed by the cavalry. The U. S. forces lost 108 in killed and wounded, and the Indians left 40 of their number dead on the field. The Indians immediately evacuated their village, and on the following day the troops burned it. In 1839, when Gen. Harrison and John Tyler were candidates for pres. and vice-pres., the battle of T. was recalled in a popular campaign-cry, 'Old Tippecanoe and Tyler too!'

TIPPERARY, *tĭp-ėr-ā'rĭ:* inland county of the province of Munster, Ireland; bounded s. by Waterford, w. by Cork, Limerick, Clare, and Galway; 1,659 sq. m., or 1,061,731 acres, of which 843,837 are arable, 178,188 uncultivated. Pop. (1871) 216,713, of whom 208,227 were Catholics, 18,459 Protestants; (1881) 199,004, mostly Rom. Catholics. The inhabitants are chiefly engaged in agriculture. Pop. (1891) 173,882.

The county of T. is mostly in the basin of the river Suir. There are many little lakes. The county is intersected by two railways. The surface is generally somewhat level: among the hills are the Galtees (3,000 ft. high), Knockmeledown (2,700 ft.), and Keeper Mountain (2,100 ft). There is a singular height called the Devil's Bit, to which many popular legends attach. The soil of the plain is a rich calcareous loam, singularly fertile, especially a district called the Golden Vein, in the centre of which is the town of Tipperary (q.v.). In geological formation the plain belongs to the great central limestone district. The hills are mostly of clay-slate, surrounded or surmounted by sandstone. There is much bog in the central and e. districts, one continuous tract extending 30 m. The mineral productions are coal (anthracite), copper, lead, zinc, and fire-clay; also excellent slates. Dairy-farming and raising of cattle have largely taken the place of the production of cereals. Flax is sparingly produced.

Anciently T. formed part of the two distinct principalities of Ormond, or North Munster, and Desmond, or South Munster: after the English invasion, T. was formed into a county by King John 1210; but the authority of the conquerors was long little more than nominal. Eventually it was divided between the Anglo-Norman families of Butler, which held Ormond, and Geraldine, to whom a portion of Desmond fell. The Anglo-Norman and Celtic antiquities are numerous: the city of Cashel, presenting, in the ruin of Holy Cross, a noble specimen of the monastic remains of the mediæval period, and the castle of Cahir exhibiting the military and baronial architecture of the same age. There is a series of curious caves near the border of the county of Cork.

TIPPERA'RY: market-town of the county of T., Ireland; on the river Arra, 110 m. s.w. from Dublin by railway. T. has an extensive trade in butter. The town is very ancient, and soon after the invasion was occupied as a strong place by the English, who built a castle in it during the Irish expedition of King John. The town is well built and contains a large and handsome Rom. Cath. church and several Prot. churches.—Pop. (1891) 6,391.

TIPPET, n. *tĭp'pĕt* [AS. *tæppet*, a tippet—from L. *tapētĕ*, cloth—from Gr. *tapēs*, a carpet]: a narrow garment or covering of fur or cloth for the neck and shoulder.

TIPPLE, v. *tĭp'pl* [Bav. *zipfel*, a corner of anything, a small portion: prov. Eng. *tip*, a draught of liquor: Low Ger. *tippl*, a dot, a fine drop: Norw. *tipla*, to drip slowly, to sip]: to drink intoxicating liquors frequently in small quantities or to excess: N. an excess in drinking intoxicating liquors: the liquor taken in tippling. **TIP'PLING**, imp. *-plĭng:* ADJ. indulging in the habitual use of intoxicating liquors: N. the habitual use of strong liquors; a drinking to excess. **TIPPLED**, pp. *tĭp'pld:* ADJ. intoxicated. **TIP'PLER**, n. *-plėr*, one who tipples. **TIPPLING-HOUSE**, a shop where intoxicating liquors are retailed to be drunk on the premises; a dram-shop.

TIPPOO SAHIB, *tĭp-pô' sâ'hĭb*, Sultan of Mysore: 1749–1799, May 4; son of Hyder Ali (q.v.). Efforts were made to instruct him in Mohammedan learning; but T. preferred athletic exercises and the companionship of the French officers in his father's service, from whom he learned European military tactics. This knowledge he afterward put to effective use during his father's wars with the British. On the death of his father, he was crowned with little ceremony, returning at once to the head of his army, which was then engaged with the British near Arcot. In 1783 he captured and put to death most of the garrison of Bednore; but when his French allies had news of the peace between France and England, they retired from his service; and T. agreed to a treaty 1784, stipulating for the *status quo* before the war. His inveterate hatred of the English led him to invade the protected state of Travancore; and in the war (1790–1792) the British, under Colonel Stuart and Lord Cornwallis, were aided by the Mahrattas and the Nizam, who detested their powerful neighbor (T. being a fanatical Mohammedan); and though he laid waste the Carnatic almost to the gates of Madras, he was ultimately compelled (1792, Mar. 16) to resign one-half of his dominions, pay an indemnity, and give his two sons as hostages for his fidelity. Nevertheless, his secret intrigues in India against the British were almost immediately resumed; another embassy was sent to the French; and the invasion of Egypt by the latter in 1798, and T.'s machinations, having almost simultaneously become known to the gov.gen., hostilities were begun 1799, Mar.; and two months afterward T. was driven from the open field, attacked in his capital of Seringapatam, and, after a gallant resistance, slain. His government of Mysore after 1792 was oppressive; yet T. was extremely popular, and after his death was esteemed by the Mohammedans as a martyr to the faith of Islam.

TIPSTAFF, n. *tĭp'stâf:* see under TIP.

TIPSY, a. *tĭp'sĭ* [Swab. *tapps;* Swiss, *tips*, a fuddling with drink: Swiss, *tipseln*, to fuddle one's self: connected with TIPPLE]: affected with liquor; slightly intoxicated. **TIP'SILY**, ad. *-lĭ*. **TIP'SINESS**, n. *-nĕs*, the state of being tipsy.

TIPTOE, TIPTOP: see under TIP.

TIPULARY, a. *tĭp'ū-lėr-ĭ* [L. *tip'ŭla*, an insect that runs swiftly over the water]: of or pertaining to insects of the genus *Tipŭla*, or the crane-fly kind.

TIP'ULA AND TIPU'LIDÆ: see CRANE-FLY.

TIRABOSCHI, *tē-râ-bos'kē*, GIROLAMO: Italian author: 1731, Dec. 18—1794, June 3; b. Bergamo. He studied at Monza, and entered the order of the Jesuits. Toward 1766 he was appointed prof. of rhetoric at Milan, where he wrote his first work, *Vetera Humiliatorum Monumenta* (1766); and 1770 succeeded Granelli as librarian to the Duke of Modena. T. now availed himself of the rich stores of the ducal library, besides making extensive researches in other archives, to compose *Storia della Letteratura Italiana* (History of Italian Literature) (13 vols. 1771-82; best ed., Milan, 16 vols. 1822–26). It embraces the history of ancient and modern Italy, and is especially valuable for the light which it throws on the intellectual condition of the peninsula during the dark ages, and the brilliant period from Dante to Tasso. T. ends his elaborate survey with the 17th c. It is impossible to praise too highly the learning and the conscientious accuracy of the author, even though minute and special investigations of many of the epochs have since necessitated revision of parts of the work. Abridged translations have appeared in

French and German. A continuation embracing the literature of the 18th c. was written by Lombardi (*Storia della Letteratura Italiana nel Secolo XVIII.*). T. died at Modena. Other works by him are *Biblioteca Modenese* (6 vols. Mod. 1781–86); *Memorie Storiche Modenesi* (3 vols. Mod. 1793).

TIRADE, n. *tĭ-răd′* [F. *tirade*, a long train of words—from F. *tirer*, to draw]: a long train of words; a long-drawn passage or sequence of expression on a single theme; a long-drawn declamatory outpour of words, especially in censure or reproof.

TIRAILLEUR, n. *tĭr′ĭ-yėr′* [F.]: one of a body of sharpshooters thrown out from the main body of an army, put in front to annoy the enemy; a skirmisher.

TIRE, n. *tīr* [an abbreviation of Attire, which see]: in *OE.*, a head-dress; attire; furniture; apparatus: V. in *OE.*, to dress the head by doing up the hair; adorn; attire. **Tire-woman**, a female head-dresser; a milliner; a dresser in a theatre. **Tiring-room**, the dressing-room of a theatre. **Tiring-house**, in OE., a tiring-room.

TIRE, n. *tīr* [from *tie*, to fasten or bind]: a heavy band or hoop of iron placed around a wheel to form the tread and to tie or bind the fellies of wheels together.

TIRE, v. *tīr* [AS. *teran*, to break, to tear: Low Ger. *teren*, to pull, to plague: Sw. *tæra*, to rub, to wear away: AS. *tirian*, to vex, to irritate: O. Dut. *tergen;* Dan. *tærge;* Ger. *zergen*, to irritate: Dan. *tirre*, to tease, to worry—*lit.*, to provoke, irritate, or harass]: to wear out and fatigue; to weary; to exhaust the strength by labor; to be fatigued; to fail with weariness; to have the patience exhausted. **Tiring**, imp. *tīr′ĭng*. **Tired**, pp. *tīrd:* Adj. weary; fatigued; jaded. **Tiredness**, n. *tīrd′nĕs*, the state of being wearied. **To tire out**, to weary or fatigue beyond further exertion; to exhaust the patience of. **Tiresome**, a. *tīr′-sŭm*, fatiguing; wearisome; tedious; exhausting patience. **Tire′somely**, ad. *-lĭ*. **Tire′someness**. n. *-nĕs*, the quality or state of being tiresome; tediousness.—Syn. of 'tire': to weary; fatigue; exhaust; harass; jade.

TIRE, v. *tīr* [Icel. *tæra;* Low Ger. *teren;* Ger. *zehren*, to consume (see Tear 2)]: in *OE.*, to draw; pull; seize; tear; pull apart and prey upon, as birds of prey. **Tir′ing**, imp. **Tired**, pp. *tīrd*.

TIRE, or **Tier**, n. *tēr* [OF. *tiere*, rank, order: Low Ger. *tier*, a row of connected things (see Tier)]: in *OE.*, a row or rank; in *mil.*, guns, shot, and shells, etc., placed in a regular form.

TIREE, *tĭ-rē′:* an island of the Inner Hebrides, included in Argyleshire, Scotland; 20 m. n.w. of Iona; 13 m. long, and about 6 m. in extreme breadth. The surface is low, rising in the n. little above 20 ft., and in the s. to about 400 ft. above sea-level. It is without trees and shrubs, and has numerous small lakes. Remains of Scandinavian forts dot the shores, and standing-stones, ruined churches, and ancient graves are found in the interior.—Pop. (1881) 2,730.

TIRESIAS, *tī-rē′shĭ-as*, in Greek Mythology: famous prophet, who, according to one legend, was struck blind by the goddess Athena because he had seen her bathing. Another legend represents Hera as depriving him of his sight because, being made arbiter in the dispute between her and Zeus, he had decided in favor of Zeus; when Zeus as a compensation granted him the inner vision of prophecy, and prolonged his life for several generations; but T. at last found death by drinking from the well of Tilphossa. There are many variations of his legend in the myths of Greece. According to Homer, T. was the only human being in the regions of the dead whom Proserpine allowed to retain intelligence. T. is the theme of a fine poem by Lord Tennyson (1885).

TIRL, v. *tėrl* [a form of THIRL 1]: in *Scot.*, to vibrate; move tremulously; twirl; shake. TIR′LING, imp. TIRLED, pp. *tėrld*. To TIRL AT THE PIN, to shake or rattle the thumb-piece of a latch before opening the door.

TIRLEMONT, *tirl-mōng′* (Flemish, *Thienen*): town of Belgium, in S. Brabant, on the Great Geete, about 80 m. e.s.e. of Brussels, on the Brussels and Cologne railway. The church of St. Germain, on an eminence, dates apparently from the 9th c., and contains an altar-piece by Wappers. Beer and hosiery are manufactured. T. was ravaged by Marlborough 1705; and here the French under Dumouriez defeated the Austrians 1793.—Pop. (1876) 13,296; (1888) 15,315.

TIRNOVA, *tĭr′no-vâ:* town in the principality of Bulgaria, on the Jantra, 35 m. s.s.e. of Sistova. It was formerly the chief town of Bulgaria; and since 1878 (see BULGARIA) it is again the seat of the national govt. There are numerous mosques, churches, and synagogues; dyeing is carried on, and silk and coarse cloth are manufactured. —Pop. (1888) 11,314.

TIRO, n. *tī′rō:* same as TYRO (q.v.).

TIROLITE, n., or TYROLITE, n. *tĭr′ō-līt* [so called from being found in many parts of the *Tyrol;* Gr. *lithos*, a stone]: copper-froth; a fine verdigris-green or azure-blue carbonate of copper and arsenic.

T-IRON, n. *tē-ī′ėrn:* rolled bar-iron, shaped, when cut in sections, like the letter T.

TIRRIT, n. *tĭr′rĭt* [comp. Gael. *tuireadh*, a lament, a dirge]: in *OE.*, a lamentation; a complaint; a wail.

TIRYNS, *tī′rĭns:* small city of Argolis, in the Peloponnesus, in the prehistoric period of Greece, long before the Dorian immigration; about 3 m. from the sea, s.e. of Argos, near the head of the Argolic Gulf. According to the common tradition, it was founded by Prœtus, a mythic king of Argolis; and its massive walls, like other rude massive structures in Greece of unknown antiquity, were reputed the work of the Cyclopes. Prœtus is said to have been succeeded by Perseus; and in this place Hercules was believed to have passed his youth. At the time of the Trojan war, T. appears to have been subject to the kings of Argos. Its greatest prosperity was in B.C. 11th and 10th c. Some time (probably about B.C. 468) after the battle of Platæa (to which the Tirynthians sent troops), the city was taken by the Argives, and destroyed—the walls of the citadel only being left standing, the wonder and admiration of later ages.—T. affords one of the most interesting specimens of Cyclopean architecture, the ruins of this place, and those of the neighboring city of Mycenæ, being the grandest in Greece. The ruins of T. illustrate the Homeric palaces of a thousand years before Christ. The Acropolis, or citadel of T., was on the summit of a low, flat, rocky hill, rising abruptly out of the dead level of the plain of Argos, and appears to have consisted of an upper and a lower inclosure of nearly equal size, with an intermediate platform. There were two main entrances, on the e. and on the s. sides, with a postern on the w. The entire circuit of the walls still remains more or less preserved; they are more than 20 ft. in thickness—their lower courses of unhewn stones of enormous size, rudely piled in tiers one above the other, without mortar or cement, the interstices being filled with smaller stones, and the whole bedded in clay: above were courses of sun-dried brick. The upper story was probably of wood. There are several covered galleries of singular construction in the body of the wall, on the e. and the s. sides, the roof being formed by sloping the courses of masonry on each side of the passage at an angle to each other. One of the galleries has six recesses, or niches, on the outer side of the walls, intended probably to facilitate defense. At the top the wall was covered in parts with a colonnade of wooden pillars resting on stone blocks.—Dr. Schliemann's interesting and important excavations in 1884–5 are described in his *Tiryns* (Lond. 1886).

'TIS, *tĭz:* a contr. of IT IS.

TISANE, or TISAN, n. *tĭs'ăn* [F. *tisane*—from L. *ptisăna;* Gr. *ptisănē*, barley crushed and cleaned]: a drink for a sick person; an infusion made of certain herbs, leaves or flowers, used medicinally, especially in France; diet-drink: see PTISAN.

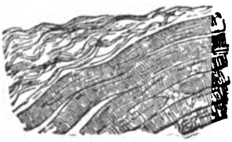
TISCHENDORF, *tĭsh'ĕn-dorf*, LOBEGOTT FRIEDRICH KONSTANTIN VON, LL.D., D.C.L., Count: eminent biblical critic: 1815, Jan. 18—1874, Dec. 7; b. Lengenfeld, in Saxony. He was educated at the Univ. of Leipzig, and under the influence of Winer engaged ardently in critical study of the New Test., early becoming convinced of the need of more exact collations of MSS. At Paris (1840, Oct.—1843, Jan.) his decipherment of the previously illegible *Codex Ephraemi Rescriptus* gave him his first wide repute. His journeys and labors in search of the best and rarest biblical MSS., in which he was liberally assisted by the Saxon and Russian governments, had results exceedingly valuable. From the convent of St. Catharine, on Mt. Sinai, where T. was entertained by the monks, he brought 43 leaves (of the 345½ leaves) of one of the greatest biblical treasures extant—the Sinaitic Codex (q.v.). These precious leaves he accidentally noticed in the basket of papers furnished him for kindling his fire. On a second journey 1859, he secured the remainder as a present to the czar of Russia. Among the most important of his many works are the editions of the *Sinaitic MS.* (1862,63,65), the *Eighth Critical Edition of the New Testament* (1864–72), and *Monumenta Sacra Inedita* (1855–70). After being an extraordinary and ordinary prof. at Leipzig from 1845, he became prof. of theology and of biblical paleography 1859, a chair in the latter subject having been instituted for him. The results of T.'s labors in New Test. criticism have been among the greatest achieved by any one scholar in modern times. He was created a count of the Russian empire, an LL.D. of Cambridge, a D.C.L. of Oxford, etc. He died at Leipzig.

TISHRI, *tĭsh'rĭ*, or **Tisri,** n. *tĭz'ri* [Heb. *tishri*—from Chald. *shera'*, to open, to begin]: the first month of the Hebrew civil year, and the seventh of the ecclesiastical, answering to parts of our September and October.

TISIC, TISICAL: see Phthisic, under Phthisis.

TISSUE, n. *tĭsh'ū* [F. *tissu*, woven—from F. *tisser;* L. *texĕrĕ*, to weave]: any woven stuff; cloth interwoven with figured colors, or with gold or silver thread; any thin and delicate texture or fabric; in *anat.* or *bot.*, the minute elementary structures of which organs are composed: a connected series, as a *tissue* of lies: V. to form tissue of; to interweave. **Tis'suing,** imp. **Tis'sued,** pp. *-ūd:* Adj. variegated. **Tissue-paper,** a very thin semi-transparent variety of paper. **Bast tissue,** modification of woody tissue in which the cells are longer and more elastic. **Cellular tissue,** the tissue of vegetables which consists wholly of ordinary cells and contains no vessels. **Vascular tissue** consists of tubes and of wood-cells usually found in bundles. **Woody tissue,** tissue composed of long and slender cells overlapping each other. **Vegetable Tissues** (see Cell-theory—*Vegetable Histology:* Vascular Tissue: Vegetable Tissues).

TISSUES, Animal: minute elementary structures of which animal organs and substances are composed. They may be either normal or pathological. For the most important of these T., see their special titles: here is given the view now most common regarding their classification (see Histology).—The normal T. are divisible, according to Virchow and his followers, into three groups or categories: (1) T. which consist exclusively of cells, when cell lies close to cell; (2) T. in which one cell is regularly separated from the others by an amount of intermediate matter, or intercellular substance; (3) T. in which the cells have attained specific, higher forms of development, by means of which their constitution has acquired an entirely peculiar type. As illustrations of the first group of T., the simple cellular T. in the modern sense (cellular tissue here being quite distinct from areolar or connective tissue), we may take the epithelial formation—e.g., as occurring in the epidermis and the nails, and in the epithelium of mucous and serous membranes, in the crystalline lens of the eyes (which is originally a mere accumulation of epidermis), and in the glands. The second group is formed by the connective tissue, which is composed of intercellular substance, with cells of various forms embedded in it, and includes cartilage, fatty tissue, etc. In the third group, which is somewhat heterogeneous, the structures are usually more or less tubular. This group includes the muscles, nerves, and vessels, and Virchow also places the blood in it. This whole arrangement is altogether at variance with those adopted not many years ago. *This* arrangement has reference to General Histology (*tissues*, properly so called), while the older had reference to Special Histology, or the structure of organs into which a combination of various tissues may enter. Thus, the *osseous tissue* of general histology consists of bone-cells + calcified intercellular substance, while *bone as an organ* consists of osseous tissue + medullary tissue + periosteum + vessels + nerves; similarly, nervous tissue is by no means identical with cerebral matter, which additionally contains membranes, vessels, etc.



Section of Animal Tissue.

Morbid T. may be classified on exactly the same plan as the physiological or normal tissues. The belief is gradually extending that there is nothing peculiar or specific in pathological structures, or, in other words, that every pathological tissue has its physiological prototype, and that 'no form of morbid growth arises which cannot in its elements be traced back to some model which had previously maintained an independent existence in the economy.'—Virchow's *Cellular Pathology*, translated by Chance, p. 60. The distinguished pathologist here quoted maintains that there is no other kind of heterology in morbid structures than the abnormal manner in which they arise, and that this abnormity consists either in the production of a structure at a point where it has no business, or at a time when it ought not to be produced, or to an extent at variance with the typical formation of the body; 'but,' he adds, 'practical experience shows us that it would be altogether incorrect to conclude from the mere correspondence of a pathological tissue with a physiological one that the case would continue to follow a benignant course.' The curious bodies provided with large nuclei and nucleoli, which have been described by many pathologists as 'the specific polymorphous cells of cancer,' are merely irregularly developed epithelial cells, such as occur, e.g., in the lining of the urinary passages; and the apparent heterology of other morbid growths may be similarly explained.

TIT, n. *tĭt* [Norw. *tita;* Icel. *titlr,* a small bird (see **Tot**): prov. Eng. *titty,* small]: any very small thing; a small horse or woman, in contempt; one of several small birds; specifically, a Titmouse (q.v.). **Tit for tat**, a variation of *tip for tap,* 'blow for blow;' an equivalent by way of revenge or repartee. **Tit'ling**, n. *-lĭng* [Icel. *titlingr*]: the titlark; the hedge-sparrow. **Tittle**, n. *tĭt'tl,* a particle; a minute part; a jot. **Tit'tle-tat'tle**, n. *-tăt'tl,* idle trifling talk; an idle trifling talker: V. to talk idly; to engage in senseless talk. **Tit'tle-tat'tling**, imp. *-tling.* **Tit'tle-tat'tled**, pp. *-tăt'tld.* **Tit'lark**, a small species of lark. **Tit'mouse**, n. *-mows* [Ger. *meise;* Dut. *mees,* a titmouse: not connected with *mouse*]: small insessorial bird of several species; plu. **Tit'mice** (see **Tit**, below).

TIT, or **Tit'mouse**: any bird of the family *Paridæ.* They are small birds, of which there are more than 50 known species, widely distributed throughout Europe, Asia, Africa, and N. America. The popular names Tit and Titmouse are very generally given to them by English-speaking people. They are bold sprightly birds, extremely active, flitting from branch to branch, running rapidly along branches in quest of insects, and often clinging to the underside of branches with their back downward. They feed not only on insects, but also on grain and seeds, have no objection to carrion, and sometimes kill young and sickly birds by strokes of their bill. They are very pugnacious, and the female tit shows great courage in defense of her nest, often continuing to sit when the nest is approached. In winter, many of the species gather into small flocks, and approach houses and villages. These birds are extremely useful in preventing the multiplication of noxious insects. The **Crested** T. (*Parus cristatus*) is a common species in Europe. The **Great** T. (*P. major*) is the largest European species; not quite 6 inches long. Its usual note is a kind of chatter, but it sometimes imitates the notes of other birds. The **Blue** T. (*P. cæruleus*) and the **Coal** T. (*P. ater*) are other species. The Blue Tit is perhaps the most pert and audacious of the Brit. species; it is familiarly named *Tomtit.* The upper part of the head is light blue, and a bluish tinge prevails in the plumage. The **Long-tailed** T. (*Panurus biarmicus*), common in Britain, has the tail about as long as the body. The **Penduline** T. (*Aegithalus pendulinus*) of s. Europe makes an interesting nest, which in form resembles a flask, and is generally suspended at the end of a flexible twig, near to or overhanging water. It is nicely woven of fibres of bark and the down of willow or poplar catkins, and the opening is in the side. The **Chickadee** or **Blackcap** T. (*Parus atricapillus*) is very common in N. America. The **Tufted** T. (*Lophophanes bicolor*) is the largest Amer. species. The **Black-crested** T. (*L. atrocristatus*) has a similar head-tuft. The 'bottle-tits' or 'bush-tits,' building nests like the Penduline T., are represented by small species in the s.w. United States and in Mexico, of the genus *Psaltriparus.* The **Gold** T. or **Yellow-headed** T. (*Auriparus flaviceps*) is of the same region.

TITAN, n. *tī'tăn:* in *heathen myth.*, one of the 12 sons and daughters of Heaven and Earth; the famous war of the Titans was between Jupiter, aided by his brothers and sisters, and Kronos (Cronus)—who has usually been identified with Saturn (but see SATURN)—their father, the result being the deposition of Kronos, and the establishment of Jupiter on the throne of heaven. TI'TAN, a., or TITANIC, a. *tī-tăn'ĭk*, of or relating to the Titans; superhuman; enormous.—The *Titans* or *Titanidæ* (originally called *Ouraniōnes*, Celestials), in Greek mythology, were the sons and daughters of Uranus (Heaven) and Gæa (Earth). Their names, as commonly given, were: Oceanus, Cœus, Crius, Hyperion, Iapetus, Kronos, Theia, Rhea, Themis, Mnemosyne, Phœbe, and Tethys; Dione, Phorcys, and Demeter are added by some writers. Instigated by their mother, the Titans, headed by Kronos, rose against their father, emasculated and deposed him, and liberated their brothers the Hecatoncheires (Hundred-handed) and the Cyclops (q.v.), from Tartarus. Kronos, being made king, threw the Cyclops back again to Tartarus, and married his sister Rhea. In order to escape being deposed by one of his own children, as it was foretold he would be, Kronos swallowed each as it was born. Rhea, when she gave birth to Zeus (q.v.), saved his life by giving a stone wrapped in a cloth to Kronos, who swallowed it, believing it to be his child. Zeus, when he grew up, gave his father a potion which caused him to vomit the stone and the children that he had swallowed. Assisted by his brothers and sisters, with the Cyclops and Hecatoncheires, Zeus began the ten years' conflict with the Titans, which resulted in the complete overthrow of the Titans, who were hurled down into a dungeon below Tartarus, surrounded by a brazen wall, and guarded by the Hecatoncheires.—The name T. is given also to the descendants of the Titans, e.g., Prometheus, Hecate, Helios, Selene, etc.

TITANIA, n. *tī-tā'nĭ-a* [L.]: a name of Latona, as daughter of the Titan Cœus; of Pyrrha, as a descendant of the Titan Prometheus; of Diana, as the sister, and of Circe, as the daughter, of Sol: in *Midsummer Night's Dream*, name of the wife of Oberon.

TITANIUM, n. *tī-tā'nĭ-ŭm* [Gr. *titănos*, lime, white earth]: one of the metals, allied to tin, of dark copper-red color with strong metallic lustre, found sometimes in small cubical crystals in the slag of blast-furnaces. TITANITE, n. *tī'tăn-īt*, prismatic titanium ore—better known by the name of *sphene*. TITANIC, a. *tī-tăn'ĭk*, pert. to or containing titanium. TITANIC ACID, the oxide of titanium; the form in which titanium occurs as a constituent of several minerals. TITANIFEROUS, a. *tī'tăn-ĭf'ĕr-ŭs* [L. *fero*, I bear]: containing or yielding titanic acid and titanium.—*Titanium* (sym. Ti, at. wt. 48, sp. gr. undetermined) is a comparatively rare metal, which, according to the method by which it is procured, occurs as a gray, heavy, iron-like powder, which burns with brilliant scintillations in the air, and is converted into titanic oxide; or occurs in prismatic crystals. At 212° F. it decomposes water, and it is soluble in hydrochloric acid. It is obtained in crystalline form by heating sodium in the vapor of bichloride of titanium. It never occurs native, but is found in association with other elements in various minerals, of which the most important are *Anastase*, *Rutile*, and *Brookite*, which are different forms of titanic oxide; and in the several varieties of titaniferous iron, consisting of ferrous titanate. A remarkable artificial compound of the metal is often found in the form of copper-colored cubic crystals adhering to the slags of iron-furnaces. They are hard enough to scratch agate, and are in the highest degree infusible; and no acid except a mixture of nitric and hydrofluoric acids has any action on them; but they are volatile at an extremely high temperature. They are a compound of titanium cyanide with titanium nitride. The most important compound of this metal is *Titanic Oxide* (TiO_2), which occurs in the minerals rutile, brookite, and anastase, each of which has a distinct crystalline form and a different specific gravity. Titanic oxide is obtained usually by a somewhat complicated process from rutile.

TITANOSAURUS, *tī-tan-ō-saw'rŭs*, or **ATLANTOSAURUS**, *ăt-lăn-tō-saw'rŭs:* genus of mammoth lizards, belonging to the order *Dinosauria*. The remains of T. are found in the Jurassic formations of N. America. The term T. is synonymous with *Atlantosaurus*, one species of which, *A. montanus*, from Colorado, is, says Prof. Marsh, 'by far the largest land-animal yet discovered, . . . 50 or 60 ft. in length, and, when erect, at least 30 ft. in height. It doubtless lived upon the foliage of the mountain forests.'

TIT-BIT, or **TID-BIT**: see under TID 1.

TITE, *tīt*, Sir WILLIAM, C.B., F.R.S., F.S.A.: English architect: 1802–1873, Apr. 20; b. London. His first independent work was the Scotch Chh. in Regent's Square, London (1825). His most memorable work was the Royal Exchange. He was M.P. for Bath 1855 till his death. T. was a great book-collector; after his death his extremely valuable collection was sold for very high prices.

TITHE, n. *tīth* [AS. *teotha*, tenth; *teothian*, to tithe or take a tenth: Fris. *tienda*, tenth: Icel. *tiund*, tithe]: a tenth part; the tenth part of the produce of land and stock, in some countries allotted to the clergy, now in England commuted into a rent-charge on the land, payable in money (see TITHES): V. to tax to the amount of a tenth; to pay tithes. TITHING, imp. *tī'thĭng:* N. the act of one who tithes; the taking of tithes; in *Eng. in AS. times*, a district, the tenth part of a hundred, originally containing *ten* householders, each of whom was responsible to the king for the good behavior of the others (see HUNDRED). TITHED, pp. *tīthd:* ADJ. in *OE.*, paid as tithe. TITHING-MAN, the officer of a town; a parish officer; a constable. TI'THABLE, a. *-thă-bl*, subject to the payment of tithes. TI'THER, n. *-thėr*, one who tithes or collects tithes. TITHE-COMMISSIONER, one of a board of officers in England to whom all matters pertaining to tithes are referred for settlement. TITHE-FREE, exempt from the payment of tithes.

TITHES: tenth part of the produce of the land, set aside by ancient usage, and subsequently by law, for support of the ministers and observances of religion. This provision for the priesthood passed at a very early period from the Jewish into the Christian Church; indeed, the same or a similar appropriation is traceable in the other ancient religions. It is observable under the patriarchal system, in the words of Jacob (Gen. xxviii. 22), and in the offering of Abraham to Melchizedek (Gen. xiv. 20); and mystical reasons have been devised for the selection of the tenth part, rather than any other fractional portion of the produce of the earth, to be consecrated to the uses of religion and the ministers of religion (see Spencer, *De Legibus Hebræorum*, iii. 1–10). The details of the institution among the Jews are given in Lev. xxvii., Deut. xiv., and many other places in the Old Test. The tribe of Levi not having lands assigned, as was the case with the other tribes, drew their support from this impost.

In the Christian dispensation, the existence of a class of persons devoted to the work of guiding and superintending the church necessarily supposed some provision for their maintenance; and this necessity is distinctly expressed in the New Test. (see Matt. x. 10; Luke x. 7; Rom. xv. 27; I Cor. ix. 7–14). The obligation thus involved has been set forth in ecclesiastical legislation from the earliest period. The apostolical canons, the apostolic constitutions, St. Cyprian on *The Unity of the Church*, and the works of St. Ambrose, St. Chrysostom, St. Augustine, and the other Fathers of both divisions of the church, abound with allusions to it. This obligation, however, was discharged mainly in the form of voluntary offerings; and the legislation of the first Christian emperors, while recognizing the duty of maintaining the clergy (as they had then come to be termed), and assigning lands and other property for their support, made no general enactment of tithes. The Council of Tours, 567; the second Council of Macon, 585; that of Rouen, 650; of Nantes, 660; of Metz, 756; and some others, distinctly sanctioned T.; and at length Charlemagne by his capitularies formally established the practice within those portions of the ancient Roman empire to which his legislation extended.

From this and other sources, the payment of a tenth to the church extended throughout western Christendom. By some the claim was held to be of divine law; by others, of human institution; but, in the gradual progress of relaxation, the right established solely for the church began to be usurped by nobles or other powerful laymen for themselves and for purely secular uses: see IMPROPRIATION.

The introduction of tithes into England is ascribed to Offa, King of Mercia, in the close of the 8th c. The usage passed into the other divisions of Saxon England, and was in the end made general for all England by Ethelwulf. By a decretal of Innocent III., addressed to the abp. of Canterbury 1200, all were required to pay T. to the clergy of their respective parishes, and this parochial distribution of T. has ever since obtained in England. The ancient canon and civil law distinguishes many varieties of T., e.g., royal, indominicate, fiscal, salic, etc. In England, in later times, T. were of three kinds—*predial*, *mixed*, and *personal*: *predial*, arising immediately from the earth itself, e.g., grain of every kind, fruits, and herbs: *mixed*, proceeding from things nourished by the earth, e.g., calves, lambs, pigs, colts, chickens, milk, cheese, eggs, etc.: *personal*, arising from profits of personal industry in a trade, profession, or occupation; though it is commonly held that personal T. were paid ordinarily as a voluntary offering at Easter or some other period. T. were not held due from the products of mines or quarries, nor from houses, nor from wild animals, nor from tame animals kept for pleasure and not for profit. There was also an arbitrary distinction into *great* and *small* T., the *great* being T. of corn, hay, wood, etc.; the *small* being the other kinds of predial T., as well as all personal and mixed T. This distinction was important, inasmuch as the great T. of a parish belong to the Rector (q v.), and the small T. to the Vicar (q.v.). T. were originally paid 'in kind'—i.e., by actual numeration of the products of the land, and apportionment in each of the numerical tenth part, as of the tenth sheaf, the tenth lamb, calf, etc. The inconvenience and trouble of this mode early led to attempts to provide modes of commuting the payment, which took various forms—voluntary and unsystematic, yet recognized by law. Gradually the modes of exaction became recognized as liable in many cases to be oppressive, also as giving rise to disputes; and in some cases the collection could not be enforced.

A measure for commutation became absolutely necessary, and passed into law 1838. Various statutes for England or Ireland have since been enacted: their object for England is to substitute for all the other forms of payment a money rent charge, varying on a scale regulated by the average price of corn for seven years. This commutation may be either voluntary, or effected by the tithe commissioners, according to a valuation. Similar arrangements have been made in the few Rom. Cath. countries in which T. continue to be paid.—See CHURCH RATES: PARISH.

In Ireland, the settlement was effected by a general commutation of tithe into a money rent-charge, regulated by a valuation of the tithes (one-fourth being deducted for cost of collection), and payable by the proprieters, who should receive it from the occupiers of the land. Afterward this rent-charge became vested in the commissioners of church temporalities, with power to sell such rent-charge to the owner of the land charged therewith at 22½ years' purchase.

TITHONIC, a. *tĭ-thŏn'ĭk* [Gr. *Tithōnos;* L. *Tithŏnus*, in anc. myth., a son of Laomedon, consort of Aurora, endowed with immortality]: pertaining to or denoting those rays of light which produce chemical effects; actinic. **TITHON'ICALLY**, ad. *-lĭ*. **TITHONICITY**, n. *tī'thŏn-ĭs'ĭ-tĭ*, that property of light by which it produces chemical effects; actinism.

TITHONUS, *tī-thō'nŭs*, in Greek Mythology: son of Laomedon, brother of Priam, and spouse of Eos, the goddess of Morn. The story is that Eos, in asking from Zeus immortality for her spouse, forgot to ask at the same time eternal youth; so that in his old age he became completely shrunk and decrepit, whereby his 'cruel immortality' was rendered a burden to him, until, in answer to his prayer for deliverance, he was turned into a grasshopper.

TITIAN, *tĭsh'an*, or TIZIANO, *tē-tsē-â'no*, VECELLIO, *vā chĕl'lē-o*, or VECELLI, *vā-chĕl'lē:* head of the Venetian school, and one of the greatest painters that ever lived: 1477–1576, Aug. 27; b. at Capo del Cadore, in the Friulian Alps; of a good family. His predilection for drawing caused his father to send him to Venice at the age of ten, that he might learn to be a painter. His instructors were Sebastiano Zuccati and the two Bellinis, particularly Giovanni; but the painter that most influenced his style was Giorgione (q.v.), with whom for a time he had a sort of partnership. So vivid and keen was his appreciation of the distinctive features of any artist's work, that he never failed to reproduce them with striking fidelity, and even to leave the impression that he had surpassed the master whom he imitated. It has been said (though on insufficient evidence) that this irrepressible superiority broke the friendship between T. and Giorgione. The first work that brought T. prominently into notice was his completion of the *Homage of Frederick Barbarossa to Pope Alexander III.* (1512), begun by Giovanni Bellini, and left unfinished at his death. The Venetian senate, who had ordered the piece, were so much pleased with T.'s performance that they conferred on him an office with an annual salary of 300 crowns. In 1514 he painted a *Bacchus and Ariadne*, and similar works for the Duke of Ferrara, a portrait of the duke himself, besides a picture of the *Tribute-money*. While at the court of Ferrara, he made the acquaintance of the poet Ariosto, who sat to him for his portrait. On his return to Venice, he painted an *Assumption of the Virgin*, one of his grandest achievements, now in the Venetian Academy. His reputation now rose to the highest point—giving him a position higher, perhaps, than that of any other painter on record, except Raphael, Michelangelo, and (later) Rubens. Pope Leo X. and Raphael both invited him to Rome, and Francis I. to France; but he declined. The most celebrated of his many productions 1520–30 were: *St. Peter, Martyr*, a work of unsurpassable beauty; *Victory of the Venetians over the Janizaries;* and *St. Sebastian.* In 1530 his friend Pietro Aretino (q.v.), the poet, introduced him to Emperor Charles V., whose portrait he painted at Bologna, and who gave him several other commissions. From Bologna T. went to Mantua, where he executed a great number of works for Duke Frederico Gonzaga. He did not visit Spain, though several of his masterpieces are now in that country. In 1537 he executed an *Annunciation;* 1541, *Descent of the Holy Ghost upon the Apostles*, *Sacrifice of Abraham*, *David and Goliath*, and *Death of Abel;* and 1543, pictures of the

Virgin and *San Tiziano*, and portraits of Pope Paul III., Cardinal Farnese, and Duke Octavio Farnese, at Rome, where he remained three years. Emperor Charles V. twice called him to Augsburg (1547 and 50). Among his religious works for Philip II. of Spain are a *Last Supper*. *Christ in the Garden*, *St. Margaret with the Dragon*, and *Martyrdom of San Lorenzo;* besides *Venus and Adonis*, *Danaë*, *Medea and Jason*, and other classic subjects. A complete catalogue of T.'s works does not exist, but the number known is extraordinarily great—more than 600. T. died of the plague, in Venice, where, out of a pop. of 190,000, 50,000 died at that time: he had attained the age of 99.—He is best studied at Venice or Madrid, but splendid specimens of his work are in the chief European galleries. As above observed, he had at first a tendency to reproduce the style of acknowledged masters; but his surpassing genius soon emancipated itself from all imitativeness, and displayed a glorious originality and power. He was not, like Michelangelo a universal genius; he had not supreme creative invention, nor sublimity of intellect: his greatness was in painting. As a manipulator of color, and in his whole technical art, for general force and harmony of effect, he has never been matched. The luxury of light did never so enrich a painter's canvas: this is, indeed, his transcendent excellence. His minor merits of design, fertility in invention, felicity in composition, are thrown into the shade by the splendor, boldness, and truth of his coloring, which alone has sufficed to give him a place with the greatest names in art, Raphael, Leonardo da Vinci, and Michelangelo.—See Hume's *Notices of the Life and Works of Titian* (Lond. 1829); Northcote's *Life of Titian* (Lond. 1830); and *T.: his Life and Times*, by Crowe and Cavalcaselle (Lond. 1876).

TITICA′CA, Lake: see Peru.

TIT′IENS, Teresa: see Tietjens.

TITILLATE, v. *tĭt′ĭl-lāt* [L. *titillātus*, pp. of *titillārĕ*, to tickle: F. *titiller*]: to tickle. **Tit′illating**, imp.: Adj. tickling. **Tit′illated**, pp. **Tit′illa′tion**, n. *-lā′shŭn* [F.—L.]: the act of tickling or state of being tickled; any slight pleasure.

TITIVATE, v. *tĭt′ĭ-vāt:* in *slang*, to make neat or smart; to tidy; also Tittivate.

TIT′LARK and TIT′LING: see Pipit.

TITLE, n. *tī′tl* [OF. *title*—from L. *titŭlus*, a superscription, a title: It. *titolo;* F. *titre*, a title]: an inscription put over a thing as the name by which it is to be known; the inscription at the beginning of a book intimating the subject of the work and usually the author's and publisher's names; a general head containing particulars; a name; an appellation; a name of honor or dignity; a claim of right; that which is the foundation of ownership, as to an estate or house; the written document that proves a right; in *Chh. of Eng.*, the presentation to a curacy which enables a candidate to request ordination: V. to call; to name. **Ti′tling**, imp, *-tling*. **Titled**, pp. *tī′tld:* Adj. having a title or name of honor. **Title-deeds**, written instruments setting forth a man's title or right to property; written evidences of ownership of real property. Each owner is supposed to be in possession of his own T.-deeds, and their ownership passes along with that of the lands themselves. It is dangerous to part with T.-deeds, for by merely pledging them as security for money an equitable lien on the lands may be created. **Title-page**, the first page of a book containing the title. **Title-rôle**, the character or part in a play which gives name to the play.

TI'TLE, **Registration of**: entry in public records of all transfers of real estate. In all the states of the Union, such registration is required by law as a perpetual record of transactions affecting title to real estate. Hence, in the United States, the registers of the county clerk's (or like functionary's) office must possess the evidences of all transfers of real-estate title by way of purchase, gift, etc., though not of passage of title by descent: see **Record of Conveyances**.—In England, where no general system of registration exists, the complexities of transfer of title are very great; and, in that country, conveyancers, afraid to commit an error by omitting or abridging any of the ancient forms, repeat them with additions (for greater safety). Hence from time to time the legislature interferes to sweep away excrescences and to provide brief and simple forms. But though much has been done in this way to make transfer of title easy and sure, conveyancing in England is still encompassed with needless difficulty. An important step in reform—intended to be followed by others in time—was the passing of the Land Transfer Act, 1875, which *allows* registration of title whether possessory or absolute.

TITLES OF HONOR: designations to which certain persons are legally entitled by possession of particular dignities or offices. King and Emperor are T. belonging to the sovereigns of various countries; and Your Majesty is the form of address to which, by the usage of most European countries, they are entitled. Your Grace was in England, in former times, the usual address for the sovereign. The epithet Majesty (from the *majestas* of the emperors of Rome) was adopted by the emperors of Germany, who considered themselves successors of the Roman emperors; but its use by other European sovereigns is comparatively recent: Henry VIII. was the first king of England, and Henry II. the first king of France, who adopted it. Your Highness is the style adopted by the sultan of Turkey. The proper style (in full) of the reigning sovereign of the United Kingdom is, 'Victoria, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, Empress of India.' The sons of the sovereigns of England are styled Princes, and their daughters Princesses; and the sovereign's eldest son is Prince of Wales (q.v.). The title Royal Highness is given to all the children of the sovereign; and by letters patent under the great seal 1864, Feb., her majesty declared her pleasure that the children of the sons of the sovereign should also receive the same title. The different grades of the peerage have their several titles—Duke, Marquis, Earl, Viscount and Baron—each of which was in its origin a name of office involving certain specific duties. For practical directions, see FORMS OF ADDRESS.

Though most European countries have their dukes, marquises, counts, viscounts, and barons, these often differ considerably in rank from the seemingly corresponding titles in Britain, and the English rules and practices regarding title are not applicable in other lands. The complicated system of titles by law, and still more by courtesy (see COURTESY TITLES), in England, is a source of perplexity to foreigners.

TIT'MOUSE: see TIT: CHICKADEE.

TITTER, n. *tĭt'tėr* [imitative of a succession of sharp thin sounds: Dut. *tateren*, to make a rattling sound, to stutter: Icel. *titra;* Ger. *zittern*, to tremble, to shiver]: a restrained or nervous laugh; a giggle: V. to laugh in a restrained or nervous manner. **TIT'TERING**, imp.: N. restrained laughter. **TIT'TERED**, pp. *-tėrd.*

TITTLEBAT, n. *tĭt'tl-băt:* the Stickle-back (q.v.).

TITTLE, TITTLE-TATTLE, etc.: see under TIT.

TITULAR, a. *tĭt'ū-lėr* [F. *titulaire*, titular—from L. *titŭlus*, a title]: existing in name or title only; having the title without possession or enjoyment; nominal: N. a person invested with a title to an office, but who does not discharge its duties. Thus, the English kings styled themselves kings of France from the time of Henry IV. till 1800; and previous to the recent changes in Italy, the king of Sardinia, as well as the king of Naples, was titular king of Jerusalem. In English ecclesiastical law, a titular is a person invested with a title, in virtue of which he holds a benefice, whether he performs its duties or not.—In the law of Scotland, the term has a different acceptation: see TEINDS.—In the Rom. Cath. Church there are many titular dignities; but the class most noticeable has grown out of the separation between the Eastern and Western churches. The Roman pontiff claims authority over the entire extent of Christendom; and even where there is not any longer resident within the limits of an ancient church or province a body of Christians of the Roman communion, the pope claims to appoint an ecclesiastic to be bishop, metropolitan, primate, or patriarch of the ancient see (see IN PARTIBUS INFIDELIUM). In Britain, where archbishops and bishops of the Rom. Cath. Church exist *de facto*, but not *de jure*, they are styled titular. **TIT'ULARLY**, ad. *-lĭ.* **TIT'ULAR'ITY**, n. *-lăr'ĭ-tĭ*, state of being titular. **TIT'ULARY**, a. *-lėr-ĭ*, pert. to a title: N. one who has a title or right.

TI'TUS (TITUS FLAVIUS SABINUS VESPASIANUS, *tī'tŭs flā'vĭ-ŭs sa-bī'nŭs vĕs-pā-sĭ-ā'nŭs*), Emperor of Rome, 11th of the 12 Cæsars: 40, Dec. 30—81, Sep. 13 (reigned 79–81); b. Rome; eldest son of Vespasianus (q.v.) and Flavia Domitilla. Brought up at the court of Nero with Britannicus, son of Emperor Claudius, he received an excellent training both of body and mind; became adept in manly exercises, and an accomplished scholar; and subsequently, as *tribunus militum* in Germany and Britain, and commander of a legion in Judæa under his father, proved his qualities as a soldier and a general. On his father's elevation to the imperial throne, T. was left to prosecute the Jewish war, which he brought to a close by the capture of Jerusalem after a long siege. The news of the success was received with the utmost joy, and Vespasian's too suspicious temper was awakened. However, T., by returning to Rome and laying the trophies of victory at the emperor's feet, removed his unfounded jealousy, and father and son obtained the honor of a joint triumph A.D. 71. About this time T. became his father's colleague in the empire, and the impression which the conduct of the young conqueror made upon the Roman people was very unfavorable. He gave himself up to all forms of pleasure, put to death various suspected persons very summarily, and even caused one of his guests, whom he justly suspected of conspiracy, to be assassinated as he left the palace. His *liaison* with the shameless beauty Berenice, daughter of Herod Agrippa I. (q.v.), was very distasteful to the Romans; and on the death of his father (79), whom a few then believed T. to have poisoned, the Romans considered that they had evidence of the advent of a second Nero. But T.'s behavior after his hand grasped an undivided sceptre strangely belied their anticipations. The first act of his reign was to stop all prosecutions for *læsa majestas*, which had abounded since the time of Tiberius (q.v.); informers were scourged in the forum, dragged along in front of the theatres, and then either sold as slaves or banished. The ancient and venerated buildings of Rome were repaired; new ones, as the Colosseum (see AMPHITHEATRE) and the baths which bear T.'s name, were erected; and the prominent tastes of the populace were abundantly gratified by games on the most stupendous scale and continuing 100 days. T.'s beneficence was unbounded, and by reason of great disasters during his brief reign there was urgent need of it. In 79 was the great eruption of Vesuvius, which overwhelmed Herculaneum and Pompeii, and ruined many other towns and villages; in 80 a fire broke out in Rome, which raged three days, destroying the Capitol, Augustus's library, Pompey's theatre, and numerous houses; and in the tracks of these calamities followed a dreadful pestilence. T. dealt out gifts with lavish hand to the houseless and ruined sufferers; he even despoiled his palaces of their valuable ornaments to obtain money for distribution, and schemed and planned to furnish occupation for them. He became the idol of his subjects, the 'love and delight of the human race;' but, in the beginning of the third year of his reign, a sudden illness caused his death at his patrimonial villa in the Sabine country, not without the suspicion of poison by Domitian, his younger brother.

TITUS, *tī'tŭs:* companion and assistant of the apostle Paul, to whom the latter addressed one of his epistles. He accompanied Paul on his missionary tour in Asia Minor and Macedonia; twice he was Paul's envoy to the church of Corinth. He was for a time in charge of the churches in Crete. Later, T. was sent into Dalmatia, and thereafter is not mentioned in the New Testament.

TI'TUS, EPISTLE TO: one of the three 'Pastoral Epistles' in the New Test., written by the apostle Paul, probably in the latter part of his life, and after he had been liberated from his first imprisonment at Rome; though the question as to the time to which the writing of this letter can be assigned has not been satisfactorily answered. The apostle was staying at Nicopolis when he wrote the letter (see iii. 12); and the subscription identifies this place with Nicopolis of Macedonia; but this is impossible, for, as De Wette notices, that city appears to have been founded by Emperor Trajan long after the apostle's death. Jerome's opinion is probably correct, that the Nicopolis referred to was the famous city in Epirus.—The epistle concerns itself mainly with the organization and discipline of the church in Crete; is very practical, and at times sharp in its tone, as if Paul had felt more acutely than usual the vexations which 'unruly and vain talkers and deceivers, *specially they of the circumcision,*' caused him. Above all things, however, he is solicitous that the Christians of Crete should shun the immoral practices of heathenism.—From the days of Eichhorn, the Pauline authorship of this and the other Pastoral epistles (see TIMOTHY, EPISTLES TO) has been disputed by some scholars on the ground of their differing from Paul's epistles not merely in style but in doctrine: the weight of critical judgment, however, remains in their favor.

TITUSVILLE, *tī'tŭs-vĭl:* city in Crawford co., Penn.; on Oil creek, and on the Western New York and Pennsylvania and the Dunkirk Allegheny Valley and Pittsburgh railroads; 28 m. e. of Meadville, 90 m. s. of Dunkirk. It is tastefully laid out on a plateau sloping to the s.; has thorough drainage, excellent water by the Holly system, gas and electric light plants, handsome municipal building, several hotels, fine opera-house, and high and graded public schools; and contains Bapt., German Ref., Meth. Episc., Meth. Episc. Zion, Presb., Prot. Episc., Rom. Cath., and Univ. churches; 1 national bank (cap. $300,000), 1 state bank (cap. $150,000), 1 private bank; and 1 daily, 3 weekly, and 1 monthly periodicals.—Col. Drake first 'struck' petroleum oil here 1859, Aug., the first refinery was built 1861, and the place was incorporated 1867. The industries comprise manufacture of every article and tool employed in production and refining of oil; and here one may see the whole process of the petroleum industry from the pumping at the wells to the shipment of the refined oil.—Pop. (1880) 9,046; (1890) 8,073.

TIUMEN, or **Tyumen**, *tĕ-ô-mĕn'*: town of w. Siberia, govt. of Tobolsk; on the Toura, affluent of the Ob (q.v.). Its advantageous situation on the highways, by land and water, between Russia and Siberia, has made it an important commercial centre and the seat of flourishing manufactures. The vessels which navigate the Ob, the Irtish, the Tobol, and the Toura, mostly receive their cargoes here. Large quantities of leather, leather goods, carpets, soap, candles, and common pottery are manufactured and exported throughout w. Siberia, the Ural countries, the Kirghis Steppes, Khokan, Bokhara, and China.—Pop. 15,212.

TIVERTON, *tĭv'ėr-ton:* municipal borough in n.e. of Devonshire, England; 14 m. n. of Exeter, 184 m. w.s.w. of London. There are important weekly markets, and four great annual markets for cattle. There is a large lace factory, employing more than 1,000 hands. The town is on a hill between the rivers Exe and Lowman; hence the old names of the town, Twyford and Twofordtown. The streets in many places are very narrow, but clean. Rapid streams of water flow down the channels along the sides of the streets—a gift to the town about 1262, by Amicia, Countess of Devon. The castle was built 1106. The free grammar school, an old building in the Elizabethan style, was endowed by Peter Blundell 1604: in connection with the school are scholarships and exhibitions at Oxford and Cambridge.—Pop. (1881) 10,462; (1891) 10,892.

TIVOLI, *tĕ'vō-lē* (anc. *Tĭbur*): town of central Italy, province of Rome; 17 m. e.n.e. of Rome; 830 ft. above sea-level, on the slope of Monte Ripoli, one of the Apennines. T. is walled and has a fortress. The streets are steep, narrow, and beset by beggars. There is a fine cathedral, formerly a temple of Hercules, where Augustus held his tribunal. The surrounding hills are covered with olive-trees. The vines of T. are famed for a peculiar sort of grape, in great request for its firmness and luscious flavor, noticed as early as the time of Pliny the Elder. The stone called 'travertino,' of which great part of Rome is built, is brought from Tivoli. Near T. is the extensive Villa d'Este. Within and without the city there are many monuments of antiquity. In a commanding position above the falls of the Anio stands in good preservation the circular Temple of Vesta, built B.C. 70. There are also the extensive remains of Emperor Hadrian's magnificent villa; the villa of Mæcenas; remains of mausoleums, aqueducts, baths, etc. The place is visited by tourists for its waterfalls, lofty but not very picturesque.

Tibur long existed as a town (according to ancient tradition) before the building of Rome; but appears in history first in B.C. 446, during the Roman decemvirate. It was one of the principal towns of the Latin confederation. Its healthful and picturesque situation induced many wealthy Romans to choose it for their country residences. Mæcenas, Scipio, Æmilianus, the famous Marius, Metellus Numidicus, and Munatius Plancus had their Tiburtine villas. Horace preferred Tibur to all other places of resort (al though he alludes to its moist atmosphere, calling it 'Udum Tibur'), and had a country house in the neighborhood. It is one of the few towns of Latium which still stand on their ancient sites.—Pop. (1881) 9,730.

TIVY, ad. *tĭv'ĭ:* contr. of TANTIVY (q.v.).

TIZA, n. *tī'ză:* the name given to borate of lime in southern Peru, where it is found on the dry plains in white reniform nodules.

TLEMCEN, *tlĕm-sĕn'*, or TILIMSÁN, *tĭ-lĭm-sân':* town of Algeria, cap. of the province of Oran, 86 m. s.w. of the city of Oran, 2,625 ft. above sea-level, in an undulating country, everywhere irrigated and completely under cultivation. It contains a fine Rom. Cath. church, five synagogues, a splendid mosque and many other mosques, also Prot. churches; and there are numerous educational institutions, including schools for Arabs and Jews. It is protected from the s. wind by a range of hills. The town is accessible only from the s.w., the other sides presenting steeply escarped fronts. The district around T. is covered with fruit-trees of all kinds, of which the olive is one of the most valuable; and there is much cultivated land, producing cereals, tobacco, etc. Besides the special markets, a daily market is held, at which cattle, wool, grain, and oils are largely sold. Ostrich feathers and corks are exported; but the trade is mostly in cloths, hides, grain, and oils.—Pop. (1886) 19,745; (1891) 29,544.

TMESIS, n. *tmē'sĭs* [Gr. *tmēsis*, a severance—from *temnō*, I cut]: in *gram.*, the division of a compound word into two parts, and the insertion of one or more words between them; Diacope (q.v.).

TO, prep. and ad. *tô* or *tû* [Dut. *toe;* Ger. *zu*, to]: in the direction of; unto; toward, denoting motion toward a place, point, object, position, or state; as far as, denoting limit reached; upon; besides, denoting addition; for, denoting adaptation; in harmony with, denoting accord, as, true *to* life; against, denoting opposition, as, to bet 10 *to* 1; compared with; the sign or prefix of the infinitive of a verb; the particle coming between two verbs to show that the second is the object of the first; used after a verb to modify its meaning, as, he comes *to*, to fall *to:* in *colloquial usage*, the infinitive is often understood, and only *to* expressed, as 'he orders me to go, but I do not wish to' (*go* being understood). To-DAY, n. ad. this day. To-NIGHT, n. ad. this night. To-MORROW, n. ad. the morrow. To AND FRO, backward and forward. To THE FACE, directly; in presence of; in defiance of. To WIT, to know; namely; 'that is to say.' *Note.*—'*To* was originally used not with the infinitive, but with the gerund in *-e*, and, like the L. *ad* with the gerund, denoted a purpose. Thus *to love* was originally *to lovene*, i.e., to (or toward) loving, L. *ad amandum:*'—Abbott's *Shakespearian Grammar*.

TOAD, n. *tōd* [Dan. *tudse*, a toad: Icel. *tutna*, to swell: prov. Eng. *tote*, to bulge out]: reptile resembling the frog, but without its activity, named from the creature's habit of puffing itself up with air (see below). **Toad'ish**, a. *-ĭsh*, in *OE.*, like a toad. **Toad-eater**, n. *originally*, the assistant to a mountebank, who ate or pretended to eat poisonous toads, in order to give his master an opportunity of showing his skill in extracting the poison; hence, a fawning obsequious parasite; a servile flatterer. **Toad'y**, n. *-ĭ*, a sycophant; a mean flatterer or hanger-on; **Toad'ies**, n. plu. *-ĭz*: V. to fawn upon with servile flattery; to display obsequiousness toward. **Toad'ying**, imp. **Toad'ied**, pp. *-ĭd*. **Toad'ying**, n. *-ĭ-ĭng*, or **Toad'yism**, n. *-ĭzm*, servile flattery; the practice of meanly fawning on another. **Toad-stool**, name applied to various species of fungi; general name for *Agarics* and *Bolētī*.

TOAD: a batrachian mostly of the genus *Bufo:* see **Batrachia**. The form resembles that of the frogs, but is more thick and clumsy, and the hind-legs are generally short, so that the species rather crawl than leap; the hind-toes are webbed slightly or not at all. The skin is warty, and the warts or tubercles produce a milky exudation, which in some species is very fetid. Behind the ear is a porous pad—a very large parotid gland—from which copious exudation takes place. The mouth of the true toads is destitute of teeth. The food of toads consists chiefly of small insects and slugs, and they mostly inhabit shady places. In their adult state, they are much less aquatic than frogs, but their spawn is deposited in water, in which their tadpoles live for a brief time, while small. A notion has very generally prevailed that the exudation of the skin is venomous, but toads are handled with perfect impunity. They are eaten by some savage tribes.—Only two species are British. The Common T. (*B. vulgaris*) is abundant in most parts of Britain and in w. Europe, but is not found in Ireland. Its spawn resembles that of the frog, but the ova are smaller and more numerous. Toads are very useful in gardens, in preventing the excessive increase of some kinds of insects; and the market-gardeners of the neighborhood of London often purchase them at the price of fourpence each. They have occasionally been tamed. A tame T., of which an account is given by Pennant in *British Zoology*, lived more than 40 years, and was at last killed by a raven.

Numerous instances are on record in which toads are said to have been found imbedded in rocks, walls, and even in the trunks of trees, where the necessary conclusion is that they must have lived a very long time in a dormant state. Unfortunately, however, the discovery of these toads has almost always been by unscientific persons; but it is possible that in a very young stage a toad may find its way through a small crevice, which also admits insect food or nutriment in some form: see an interesting account of Dr. Buckland's experiments in Buckland's *Curiosities of Natural History*.—The other Brit. species of T. is the **Natterjack** (*B. calamita*), called also the Running T.: it never hops, and its motion is more like walking or running than the crawling of the common toad.—Several other species of T. are found in Europe. Some found in tropical countries attain very large size, and exhibit protuberances of various kinds, far exceeding the warty excrescences of the common toad.

The COMMON T. of N. America is *B. lentiginosus*, formerly assigned to several species before its varieties of color were understood. The SPADE-FOOTED T. (*Scaphiopus Holbrooki*) of e. N. Amer. is named from foot-appendages useful in digging; it is very noisy in spring. A similar species occurs in the Rocky Mt. region. The so-called Horned T. of the west is a lizard. The Obstetrical T. of Europe (*Alytes obstetricus*) is so named because the male winds the string of eggs around his legs until they are hatched. The Cell-backed T. of surinam (*Pipa Americana*) is remarkable for cells in the back of the female into which the male puts the eggs, where they remain until hatched. In several species in S. America the female receives the eggs into a pouch, as occurs in kangaroos, but of course without the nourishing apparatus of the latter; the genus is *Notrotema*.

TOAD′-FISH: see FROG-FISH.

TOAD′FLAX: herbaceous plant of the genus *Linaria*, nat. order *Scrophularineæ*, very closely allied to SNAPDRAGON (q.v.), distinguished chiefly by the spur at the base of the corolla, and the capsule opening by valves or teeth, not by pores.—The species are natives chiefly of colder and temperate parts of the old world. Some are natives of Britain, of which the most common is *L. vulgaris*, a species with erect stem 1-3 ft. high, glaucous linear-lanceolate leaves which thickly cover the stem, and terminal spikes of yellow flowers. It grows in hedges, the borders of corn-fields, etc. It has purgative and diuretic properties, and a decoction of it is used as a fly-poison; but it is regarded as a troublesome weed by farmers. It has found its way, probably with grain or other grass seeds, into the United States. A remarkable monstrosity is sometimes seen in this plant, to which the name *Peloria* has been given, the flower presenting five spurs and five usually imperfect stamens.—*L. Cymbalaria*, a pretty little plant with trailing stems and 5-lobed cordate leaves, is often planted to cover old walls, etc., and is either a native of Britain or naturalized in many places.

TOADSTONE. n. *tōd′stōn* [Ger. *todtstein*, dead stone—that is, stone containing no ores]: among *Derbyshire miners*, certain trap-rocks which occur interstratified, or in connection with the mountain limestones, void of ore: [from Eng. *toad*]: a stony concretion or jewel, fabled to be found in the head of the toad; a kind of amygdaloid, so called from its mottled aspect resembling the skin of a toad.

TOAST, v. *tōst* [OF. *toster;* It. *tostare*, to toast or parch—from L. *tostus*, pp. of *torrērĕ*, to dry, to scorch]: to dry and scorch by the heat of a fire, as bread or cheese; to warm thoroughly: N. bread scorched or browned before the fire. **Toast'ing**, imp. **Toast'ed**, pp: **Adj.** scorched by heat, as bread or cheese. **Toast'er**, n. *-ĕr*, an instr. for toasting bread, cheese, etc., before the fire—also **Toasting-fork**. **Toast-rack**, a small light stand, generally of metal, having partitions, in which dry slices of toast may stand upright.

TOAST, v. *tōst* [probably from the Ger. cry *stoss an*—that is, *clink*—the Ger. topers knocking their glasses together when they pledge each other]: to drink to the health or honor of; to drink in honor of anything, or to its prosperity; to name a health to be drunk: N. the person or thing named whose health and prosperity are to be drunk to; the call to drink to the health of another, or the sentiment uttered on such an occasion; a person frequently toasted; hence, the belle of the place or season (see **Toasting**). **Toast'ing**, imp.: N. the practice of drinking toasts. **Toast'ed**, pp. **Toast'er**, n. *-ĕr*, one who toasts. **Toast-master**, a person at a public dinner who announces the toasts and leads the cheering.

TOASTING: practice of drinking to the health or honor of any one. This practice, probably ancient, received an artificial development by the convivial habits of the 17th c.: then it became the fashion to drink to the health not only of entertainers, but also to that of each guest, of absent friends, and especially of the unmarried woman whose attractions were most generally acknowledged. Whatever may have been the origin of the use of the word 'toast' as applied to the person thus honored, it is now applied to any person or to any sentiment mentioned with honor before drinking. The French have adopted the word, making it masculine when applied to a man or a sentiment, feminine when to a woman. See the *Rambler*, 24th No.; Chambers's *Book of Days;* Valpy's *History of Toasting* (1881).

TOBACCO, n. *tŏ-băk'kō* [the American Indian name, *tabaco*, for the pipe or tube in which the natives smoke the plant, transferred by the Spaniards to the plant itself: Sp. *tabaco:* F. *tabac*]: highly narcotic and poisonous plant, indigenous in America, but extensively grown elsewhere; the dried and prepared leaves of the plant, much used in smoking and chewing, and in the manufacture of snuff. TOBAC'CONIST, n. *-nĭst*, one who manufactures the leaves of the tobacco-plant, or who sells the various manufactured forms of it: in *OE.*, a tobacco-smoker.—*Tobacco* is a plant of the genus *Nicotiana*, nat. order *Solanaceæ;* having large broad leaves, a 5-parted calyx, a funnel-shaped, 5-lobed corolla, and five stamens; the flowers growing in panicles at the top of the stem; the fruit a 2-celled, 5-valved, many-seeded capsule. The species of *Nicotiana* are mostly herbaceous plants, rarely shrubby, with large broad leaves, and everywhere covered with clammy hairs. They are natives of warm countries, most of them American, though some are found in the E. Indies. They all have the narcotic property, on account of which a few are extensively cultivated. It resides in almost all parts of the plant, though the leaves are almost exclusively used. The most important species is the COMMON T., or VIRGINIAN T. (*N. tabacum*), native of warm parts of America, whose cultivation had extended, before the discovery of the new world far to the n. of the regions in which the plant appears to be indigenous. It is about 5 or 6 ft. high, erect, with lanceolate, sessile leaves, 6–18 inches long, and rose-colored flowers, the throat of the corolla inflated, the segments pointed. There are a large number of varieties, differing in size and form of leaves and in form and color of flowers, some of which are regarded by some botanists as distinct species. Nearly every T.-growing district of the United States has its special variety of Seed-leaf T. which has been grown from native seed. Havana Seed-leaf and the Gadsden, both produced from seed originally imported from Cuba; the Perique, grown in La.; and the White Burley, which originated in O., are also popular in certain sections. The GREEN T. (*N. rustica*), sometimes called ENGLISH T. because it was the first kind introduced into England for cultivation, grows 3 to 5 ft. high, with ovate, stalked leaves, and the segments of the corolla rounded, its tube cylindrical. It is a native of the East, but is quite hardy, and therefore cultivated in more northern regions. The PERSIAN T. (*N. Persica*) has the root-leaves oblong, those of the stem lanceolate and sessile; the corolla salver-shaped, with a long tube; its lobes rather unequal. It is a native of Persia, and furnishes the Shiraz T., esteemed in the East, and milder than the common T. Other species are used in different parts of America, and some are cultivated to a small extent, as *N. repanda*, in Cuba; *N. quadrivalvis*, by the Indians on the Missouri; *N. multivalvis*, by the Indians on the Columbia; and *N. nana*, by the Indians of the Rocky Mountains.

It is doubtful whether the use of T. as a narcotic was known in the East before the discovery of America. Meyen, in his *Geography of Plants*, expresses the opinion that the smoking of T. is of great antiquity among the Chinese, because on very old sculptures he has 'observed the very same tobacco-pipes which are now in use.' Meyen's authority, however, is greater as a botanist than as an archeologist, and cannot be received as decisive of the antiquity of the sculptures of which he speaks. It is probable, but not certain, that the smoking of T. has been long practiced in China. On the introduction of the use of T. from America, it rapidly extended throughout Europe, and soon became extremely prevalent among oriental nations. The smoking of T. was found by Columbus a practice in the W. Indies, where the natives made it into cylindrical rolls, wrapped in maize-leaf. It has been prevalent from unknown antiquity among the American Indians as far n. as Canada. With them it even has a religious character, and is connected with their worship and with all their important transactions. Thus, the Calumet (q.v.), or pipe of peace, is indispensable to ratification of a treaty; and smoking together has greater significance of friendship than eating together has among other nations: also it seems to have served in the place of incense in their worship.

The seeds of the T. plant were brought to Europe first by Gonzalo Hernandez de Oviedo, who introduced it into Spain, where it was cultivated as an ornamental plant till Nicolo Menardes extolled it as possessed of medicinal virtues. It was introduced into Italy 1560. The use of T. in the form of snuff soon followed its introduction for smoking. There is no reference to the use of T. in Shakespeare; yet it was well known in England in his time, though at first its use was confined to the wealthy, as the price was very high; and it was smoked in very small pipes—probably those known to antiquaries as *Elfin Pipes*—and the smoke was expelled; not from the mouth, but by the nostrils, in which way the narcotic power of the herb is much greater. The popes Urban VIII. and Innocent XI. fulminated against it the thunders of the church; the priests and sultans of Turkey declared smoking a crime, Sultan Amuret IV. decreeing its punishment by the most cruel death; the pipes of smokers were thrust through their noses in Turkey; and in Russia, in the earlier part of the 17th c., the noses of smokers were cut off. King James I. of England issued a *Counterblaste to Tobacco*, in which he described its use as 'a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible Stygian smoke of the pit that is bottomless.' All opposition, however, was vain. The use of T. increased, and has increased to the present day, when it is more prevalent than at any former time—the luxury of rich and poor, of civilized nations and of savage tribes. Although it did not become prevalent in the East till the 17th c., the Turks and Persians are now the greatest smokers in the world; in India all classes and both sexes smoke; in China (as also in Japan) the practice is universal, and girls, from the age of eight or nine, wear, as an appendage to their dress, a small silken pocket to hold tobacco and a pipe. The use of snuff has diminished. T. is used in the three modes of smoking, chewing, and snuffing. Plugging, the stuffing of the nostrils with quids of T., has been almost universally discontinued. Chewing—still much practiced by sailors, to whom smoking is prohibited at sea, on account of the danger of fire—has greatly diminished among the refined classes. The smoking of T. is everywhere more or less social, like the use of wine; and the snuff-box in a former generation was handed from one to another in token of good-fellowship.

T. derives its botanical name (*Nicotiana*) from Jean Nicot, who introduced it into France. In that country its use in the form of snuff began in the reign of Francis II. About the same time, a snuff manufactory was established at Seville, which produced the celebrated Spanish snuff. The T. plant was soon introduced into other countries of Europe. In 1657 the manufacture and sale of T. were farmed out in Venice, and began to yield considerable revenue. Much revenue has since been derived from the same source in many countries. T. is now extensively cultivated in many parts of Europe, as well as in America and Asia. Prohibitory laws alone prevent its cultivation in southern parts of Britain and Ireland, where the climate is quite suitable. The quality of the leaf, however, deteriorates in the more northern regions, as in Germany, when it is continuously raised from home-grown seed; and seed is therefore imported from warmer countries.

Cultivation.—T. requires a rich soil, high manuring, and careful cultivation. The quantity as well as the quality of the leaf is greatly modified by climate, soil, and manures; but there is such diversity of varieties that one suited to almost any section of the United States can be readily found.

Seed is sown in a hot-bed, or in a sheltered place in open land, from Feb. to Apr., according to latitude. If carefully tended, the plants will be ready to set from Apr. to June. The land for T. should be well plowed (some growers plow two or three times), thoroughly pulverized, heavily manured, and should also receive a liberal quantity of commercial fertilizers (see FERTILIZERS). Level cultivation is sometimes practiced, but the plants are often set on ridges. Rows are 2 to 4 ft. apart, and the plants 2 to 3 ft. apart in the rows—giving 5,000 to 8,000 plants per acre; but only the smaller varieties can be set closely enough to secure the latter number. During growth of the crop, the ground must be frequently stirred and all weeds destroyed. The Cut-worm (q.v.) often proves very destructive, and makes it necessary to put out many new plants. Constant watchfulness is required to protect the leaves from the green-worm. Plants must be examined at frequent intervals, and all the worms which can be found, and the unhatched eggs on the under side of the leaves, destroyed. To increase the size of the leaves, prevent seeding, and hasten maturity, the tops of the stalks of those plants not designed for seed-growing should be broken off: this is done as soon as the flower-buds are formed. By this process all leaves less than 6 in. in length are to be removed. Some growers break the tops lower than this, and remove also some of the leaves nearest the ground. When the shoots, called 'suckers,' which start from the axils of the higher leaves, reach a length of 3 or 4 in., they should be broken off close to the stalk, and it is necessary to repeat this operation just before the crop is harvested. As soon as the plants are mature, which will be indicated by a yellow or mottled appearance of the leaves, or before this time if there is danger of frost, they should be cut close to the ground: for this purpose, a saw, hatchet, or large knife is used. This work should not be done at midday if the weather is hot, nor when the leaves are wet; and the plants must not lie too long in the sun or be exposed to the rain. When the leaves are sufficiently wilted so that they will not readily break, the plants are to be strung on laths forced through the lower ends of the stalks by means of a sharp needle, about 6 or 8 plants to each stick, and taken to the tobacco-barn, where they can be hung upon poles to dry. While the curing process is going on, great care must be given to regulate the light and ventilation. In some places the curing is done in open sheds; in others it is hastened by hanging the plants in close buildings in which fires are maintained. A recently patented process consists in taking the leaves from the stalks in the field, stringing them on wires, and drying them by artificial heat. The field is gone over several times, the leaves that ripen earliest being taken first, and the others gathered as they mature. This is said to be much less costly than the ordinary method of curing, to prevent much of waste and damage, and to insure a better quality of leaf and a more uniform coloring than could otherwise be obtained. When the ordinary method of curing is followed, the plants are allowed to hang in the barn till late in the autumn, or till winter. During mild, damp weather, they are taken down; the leaves are 'stripped' from the stalks and packed into bales, boxes, or hogsheads. The work of assorting into various grades, done formerly by the grower, is now done usually by the buyer or manufacturer.—There are not less than 50 varieties of T. grown in the United States. Some are specially adapted to certain sections. Others which succeed over a wide range of soil and climate are valuable for certain specific purposes, as smoking and manufacturing into various forms for chewing, while widely different kinds are required to meet the demands of the various foreign countries to which considerable quantities are exported.

T. is imported largely in the leaf, though considerable quantities are brought in in various states of manufacture. The chief manufactured sort is called Cavendish, made by stripping the blades of the leaves from the midribs, and, after sprinkling them with an infusion of tobacco made from the stalks and other waste parts, laying them in heaps to heat or ferment. This darkens their color; and, while still moist and flaccid, they are laid smoothly on one another, to form cakes about nine inches in length by three in breadth, which are pressed by powerful machinery until they are very compact. Another kind is called Negrohead, formed into sticks about an inch thick, and eight or nine inches in length, which are laid across each other equally, and are then pressed into cakes. When the sticks are pulled apart, the rounded depressions caused by pressing them into one another give them a slight resemblance to the wavy locks of a negro's hair, whence their name. Another kind is called Twist (or Pigtail); it is a continuous string of T. about the thickness of a quill, many yards in length, made by twisting and spinning the leaves when flaccid from being wetted and heated as above described: this string is then made into balls. This is the kind chiefly used for chewing. The leaf simply twisted into a rope, as in the kind called Varinas Roll and similar sorts, as well as that merely cut small for smoking, is all regarded as 'manufactured.'

Cigars and *Cheroots* also are forms of manufactured tobacco; but so much in favor are these with smokers that the exorbitant duty is very little check on their demand. The island of Cuba supplies not only the best but also the largest quantity, the Havana T. being exceedingly well cultivated and cared for, and adapted especially for cigar-making. The Philippine Islands export about 100,000 lbs. per annum of cigars. Cigars and cheroots are essentially the same; they differ only in form—cheroots being rolled straight instead of spirally. Cheroots are chiefly from Manila.

Snuff is another form of manufactured T.: it is made by grinding the leaf either with or without the leaf-stalks and midribs. The grinding is generally effected in wooden mortars, with pestles also of wood; and some kinds of snuff are prepared from kiln-dried T., and others from the soft leaves. The varieties are numerous, and fortunes have been made by manufacturers who have been fortunate enough to make a snuff which has become a favorite.

The United States annually produces more T. than all Europe combined. In 1890 the product was 565,795,000 lbs., grown on 747,326 acres, and valued at $43,666,665. The average annual production of all Europe is about 500,000,000 lbs. (Neumann-Spallart). The U. S. product was divided among the states as follows: Ky. 283,306,000 lbs.; Va. 64,034,000; Tenn. 45,641,000; O. 35,195,000; N. C. 25,755,000; Penn. 24,180,000; Ind. 16,153,000; Md. 14,017,000; Mo. 13,109,000; Wis. 12,846,000; Conn. 9,603,000; N. Y. 6,488,000; W. Va. 4,496,000; Mass. 3,893,000; Ill. 2,947,000; Ark. 1,156,000; all others 2,976,000. Imports were: leaf 28,720,674 lbs., value $17,605,192; cigars, cigarettes, and cheroots, 1,250,217 lbs., $4,026,828; all other manufactures $78,434—total value $21,710,454. Exports were: leaf 244,343,740 lbs., value $21,149,869; stems and trimmings 11,308,286 lbs., $329,687; cigars 3,482,000, $97,703; cigarettes 265,001,000, $830,817; all other manufactures $2,947,525—total value $25,355,601: excess of export value $3,645,147. The total domestic production of

T. and snuff was 250,815,891 lbs.; cigars 3,989,994,434; cigarettes 2,489,167,730. There were 907 manufacturers of T. and snuff, and 21,197 of cigars and cigarettes. The revenue collections from manufactured T. 1890 aggregated $33,958,991.

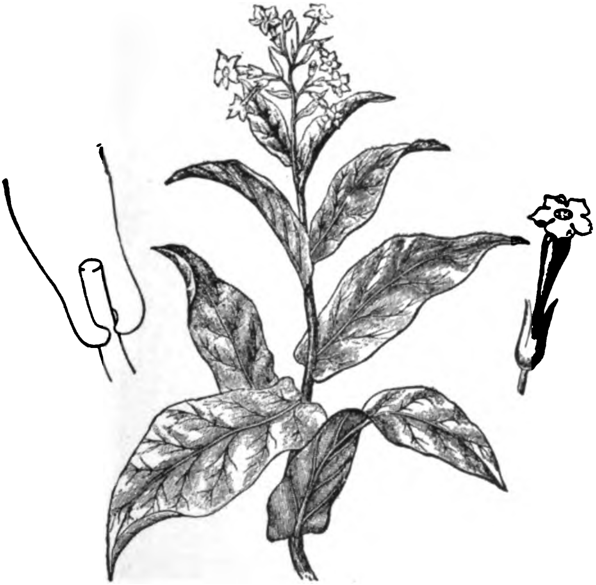
TOBACCO is used as a sedative or narcotic over a larger area and among a greater number of people than any similar substance, opium being second, and the hemp-plant third. T -leaves, when submitted to chemical analysis, yield Nicotine (q.v.), the most characteristic constituent of T., albumen, a gluten-like substance, gum, resin, malic and citric acids, and a large amount of inorganic constituents, 100 parts of the dry leaf yielding from about 19 to 27 per cent. of ash, in which potash, lime, and silica preponderate. In a physiological and medical view, the analysis of the smoke of T. is far more important than that of the leaf. From the researches of Dr. Benjamin W. Richardson, it appears that, though 'the widest differences prevail in respect to the products arising from differing cigars, differing kinds of tobacco, and differing pipes,' there are certain substances which are common to all varieties of tobacco-smoke. First, there is in all T.-smoke a certain amount of *watery vapor*, impregnated with various substances, from which it may be separated. Secondly, a small quantity of free *carbon* is always present; it is to the presence of this constituent that the blue color of the smoke is due. 'It is this carbon,' says Dr. Richardson, 'which in confirmed and inveterate smokers settles on the back part of the throat and on the lining membrane of the bronchial tubes, creating often a copious secretion, which it discolors, and which is coughed up of a dark coaly appearance.'—*For and Against Tobacco,* Lond. 1865, p. 5. Thirdly, there is a certain quantity of *ammonia* present. The ammonia gives to the smoke an alkaline reaction, bites the tongue, and makes the tongue and throat dry after much smoking. Fourthly, *carbonic acid* is always present, as may be shown by its action on lime-water. The amount differs extremely in the smoke from different kinds of T.; but, according to Dr. Richardson, it may be inferred that the sleepiness, headache, and lassitude which follow prolonged inhalation of T.-fumes are due largely to the carbonic acid. Fifthly, T.-smoke yields a *product having an oily appearance* and possessing poisonous properties. It is popularly known as *oil of tobacco,* and on further analysis it is found to contain three substances—a fluid alkaloid, *nicotine;* a *volatile substance* having an empyreumatic odor; and a dark resinous *extract* of bitter taste. The symptoms of tremor, palpitation, and paralysis which ensue after excessive smoking, especially in persons unaccustomed to the practice, seem to depend on the nicotine, which is known, by experiment, to be highly poisonous. The peculiar smell of stale tobacco-smoke, on the smoker's breath and clothing, is from the volatile empyreumatic substance; and the nauseous sharp taste when the unpracticed smoker takes a foul pipe into his mouth is due to the bitter extract. It is apparently this extract which creates vomiting in persons unaccustomed to tobacco, and of which the body after a time becomes tolerant. Hence it appears that the more common effects are due to the carbonic acid and the ammonia; while the rare and more severe are due to the nicotine, the empryeumatic substance, and the resin.

The poisonous effects which large doses of T. produce in persons unaccustomed to its use—in the form of powder, infusion, or excessive smoking—are faintness, nausea, vomiting, giddiness, delirium, loss of power of the limbs, general relaxation of the muscular system, trembling, complete prostration of strength, coldness of the surface, with cold, clammy perspiration, convulsive movements, paralysis, and death. In some cases there is purging, with violent pain in the abdomen; in others there is rather a sense of sinking or depression in the region of the heart. With these symptoms there is dilatation of the pupils, dimness of the sight, small, weak, and scarcely perceptible pulse, and difficulty of breathing. In all cases of poisoning with T., if it has been swallowed, an emetic of a scruple of sulphate of zinc should be at once administered, and the most powerful stimulants, external and internal, should be employed. Prof. Haughton has shown that nicotine and strychnine antagonize each other; on this assumption, strychnine, carefully administered, would be the proper antidote.

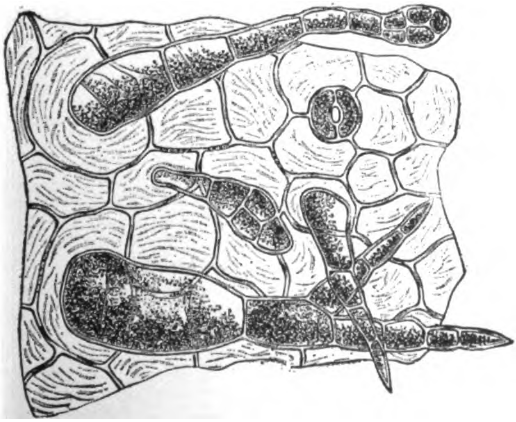
The cases are not very uncommon of slightly unpleasant results from the use of T.; but fortunately the effects produced by T. are very transitory, as the injurious elements find ready exit from the body. The system, after being subjected a few times to the influence of tobacco-smoke, becomes accustomed to it, the distressing symptoms no longer occur, and a condition of 'tolerance' is established. From the extensive investigations of Dr. Richardson, it appears that there are no grounds for believing that smoking can produce any organic changes. But it may produce various functional disturbances: (*a*) On the stomach. (*b*) On the heart, producing debility and irregular action. (*c*) On the organs of the senses, e.g., dilatation of the pupil, confusion of vision, subjective sounds, etc. (*d*) On the brain, suspending the waste of that organ, and oppressing it if it be duly nourished, but soothing it if it be exhausted. (*e*) On the nerves, leading to oversecretion of the glands which they control. (*f*) On the mucous membrane of the mouth, causing in excessive smokers what has been described as 'smoker's sore throat.' 'The disease consists of an irritable state of the mucous membrane at the back of the throat, redness there, dryness, a tendency to cough, and an enlarged, soft, sore condition of the tonsils, rendering every act of swallowing painful and difficult.' It may exist long without detection; but if a damp, cold, foggy state of the air comes on, the throat becomes troublesome and painful, enlargement of the tonsils is detected, and the symptoms are aggravated by an attempt to smoke. This condition is induced more readily by the use of cigars than of pipes; it is quite incurable so long as the patient continues to smoke, but soon disappears when the use of T. is entirely suspended. In association with this condition of the throat, the gums are usually abnormally pale and firm. (*g*) On the bronchial surface of the lungs, sustaining any irritation that may be present, and increasing the cough. There is no evidence that T.-smoke can cause specific diseases, such as insanity, epilepsy, St. Vitus's dance, apoplexy, organic disease of the heart, cancer, consumption, or chronic bronchitis. If, as is universally allowed, T. possesses, as do alcohol, arsenic (in minute doses), opium, tea, coffee, etc., the power of arresting the oxidation of the living tissues, and thus checking their disintegration, it follows (1) that the habit of smoking must be 'most deleterious to the young, causing in them impairment of growth, premature manhood, and physical degradation' (Richardson, *For and Against Tobacco*, 78); and (2) that the habit may be conducive to the physical well-being of the individual, in the lack of sufficient nourishment from food to supply the daily wear and tear of the muscular and nervous systems.

For a long controversy on the question, *Is Smoking Injurious to Health?* in which distinguished medical men took part, see *The Lancet*, 1857, I. Some reformers violently antagonize smoking as the fruitful root of numberless moral and physical evils. The whole matter is fairly summed up by Dr. Richardson in the pamphlet freely used in this article. Before the full maturity of the system is attained, even the smallest amount of smoking is of ruinous effect; subsequently the habit is, in most instances, prejudicial only when carried to excess. The difficulty is to define moderation and excess. It should be noted, however, that there certainly are individuals, and probably in large number, to whom throughout life any use of T. would be injurious. We cannot honestly say more on the score of health against T. than can be urged against tea or any other luxury; and of nearly every luxury it is the least injurious. 'It is innocuous as compared with alcohol; it does infinitely less harm than opium; it is in no sense worse than tea; and by the side of high living altogether, it contrasts most favorably.'—Richardson. Dr. E. A. Parkes says, 'From moderate use I can see no harm;' and Sir Robert Christison concludes that 'the smoke has an extraordinary power in removing exhaustion, listlessness, and restlessness, especially when brought on by bodily or mental fatigue.'—A long, perfectly clean pipe, of an absorbing material like clay or meerschaum, which can suck up the oily matter before it reaches the mouth, is to be preferred; and it has been suggested that if a plug of cotton, saturated with a strong solution of citric or tannic acid, were placed in the stem, to filter the smoke, all the nicotine would be seized by and combine with the acid. The different kinds of T. exert a different influence according to the amount of their noxious ingredients. Thus, Cavendish, Pigtail, and coarse Shag yield the oily matters in much more abundance than Latakia or Turkish; hence the last two are termed mild tobaccos. Cigars tend more than pipes to produce dyspepsia; for in smoking them,

PLATE 1.



Flowering Top of Tobacco Plant.



Microscopic Structure of Tobacco Leaf.

unless with a long mouth-piece, nicotine is absorbed. Snuffing has been deemed the least injurious form of the use of T., and chewing the most deleterious; yet sailors, who chew more freely than almost any other class, usually have vigorous health, and after long habit they can consume an almost incredible quantity: see *The Lancet*, 1847, I., 440.

T. has been used in medicine in the form of an enema, for relaxing the muscular fibres, in strangulated hernia, stricture of the bowel or urethra, tetanus, etc.; but in such cases it has now been superseded by chloroform. If it continue to hold a place in the Pharmacopœia, it will probably be as an antidote to strychnine.

Indian Tobacco (*Lobelia inflata*) has nothing in common with T. (see LOBELIA).

TOBACCO-PIPES: pipes of various materials used in the smoking of tobacco, the commonest being of a fine white clay, which has received the name *pipe-clay*. The first part of the manufacture is performed by trained children, who, with nice touch, roll out on a board a small piece of clay into a long slender cylindrical rod, at the end of which is then attached a lump of clay, just enough to form the bowl. These rudimentary pipes are arranged by dozens on a board, until they have become sufficiently hardened. The pipe-maker then takes a pointed iron wire, and, first dipping it into oil, pushes it into the end of the thin column of clay, and, having passed it through, forms the bowl with a folding brass mold. The wire is then withdrawn; and after a slight dressing with a knife, the pipes are slightly curved in the stem, and are laid aside to dry for a few days, when they are removed to a peculiar kiln whose interior chamber is only a *seggar* on a large scale, such as is used in making Pottery (q.v.). When thoroughly baked, the pipes undergo a kind of polishing or dressing, and are ready for sale. More expensive pipes are made of Meerschaum (q.v.): for various materials used for the tubes of these and other pipe-bowls, see PIPE-STICKS. *Brier-root pipes* have the bowl and stem of one piece of wood; and, though the stem is short, they partially absorb the oil produced in smoking, which, however, is perhaps as much the case with the common clay-pipe when new.

It is believed that pipes for smoking herbs for medicinal and other purposes were in use in England and elsewhere long before the introduction of tobacco. Colt's-foot, yarrow, mouse-ear, lettuce, and other plants are occasionally smoked, and no doubt have been so for centuries. A primitive pipe, still in use in some rural districts, consists of a stick of elder from which the pith has been removed, with a bowl formed of common clay and dried by the kitchen-fire. Pipes have been found near the Roman wall in Northumberland, and other Roman stations in Britain, suggesting at first the notion, now discarded, that they were used by the Roman soldiers. Many of these ancient pipes are remarkable for very small size, due probably to the high price of tobacco when introduced into Europe, and to the custom of inhaling the smoke by the mouth and expelling it through the nostrils, thus gaining the utmost narcotic effect. Similar very small pipes have been found in N. America, and the same mode of smoking has always prevailed among the Amer. Indians. See Wilson's *Prehistoric Man*, II. Stone-pipes, or pipe-bowls, have been found in Britain, cut in rude forms, and apparently used by the insertion of a tube, perhaps a straw. Such pipe-bowls, but elaborately carved, are among the most remarkable American antiquities, and are still made by the Amer. Indians, often of very hard stones adorned with figures of men and animals. Some are adapted for two tubes, for two smokers at once. Among some of the Amer. tribes, great care is bestowed on ornamenting the pipe-stem; by others, on the bowl.

The clay-pipe, much the same as now used, probably came into use in Europe very soon after the introduction of tobacco. Aubrey, 1680, says that tobacco-smokers in England at first used silver pipes, 'but the ordinary sort made use of a walnut-shell and a straw.' In the reign of William III., pipes were occasionally of brass and iron. The pipe was, in earlier days, passed round the table—one man taking a whiff or two, and then handing it to his neighbor. The criterion of age is the *form*. The barrel-shaped bowl was most usual during the commonwealth and the reign of Charles II., though it was in many various shapes. In the reign of William III., a more elongated form of bowl became prevalent, introduced probably from Holland, though the barrel-shaped bowl still was used. In the middle of the 18th c., the wide-mouthed bowl, now nearly universal, became prevalent, and the spur, previously flat, to rest the pipe upon when in use, was elongated, after a fashion supposed also to have originated in Holland. The Scottish *cutty-pipe* and Irish *dudeen* are short clay-pipes.

The pipe-makers of London, as early as 1601, had privileges which gave them a monopoly. Holland has long been famous for pipe-making. The Dutch manufacturers were very jealous of rivalry. In the middle of the 18th c., a pipe manufactory was established in Flanders, and the Dutch makers determined to ruin it. The duties were too high to admit large importation; therefore they freighted a large ship entirely with tobacco-pipes, set sail to Ostend, and purposely wrecked her there. In accordance with the maritime laws of that city, the pipes were landed from the wreck, and sold at such 'ruinous prices' as defied competition; and the new manufactory was immediately closed.

TOBAGO, *tō-bā'gō:* island, most southerly of the W. India Windward Islands (see ANTILLES), belonging to Britain; 60 m. s.e. of Grenada, 20 m. n.e. of Trinidad; 26 m. long, 7¼ m. in greatest width; 114 sq. m. The island was discovered by Columbus 1498, and named by him Assumption; the name of T. is supposed to have arisen from the free use of tobacco by the Caribs when first visited by Europeans. Claimed by the Brit., then occupied by the Dutch and the French, it was finally ceded to Britain 1814. From its gloomy-looking mountains, dense forests, and abrupt precipices, descending to the sea, T. has been called the 'Melancholy Isle;' but, on nearer approach, the aspect becomes more pleasing, though still rough and irregular, being extensively occupied with conical hills and spurs, all connected by a ridge through the interior, whose greatest elevation is 1,800 ft. above sea-level. From the high ridge descend deep and narrow ravines, which terminate in small alluvial plains. Scarborough (pop. 1,200) is its cap., pleasantly situated on the shores of Rochley Bay. Plymouth, opposite Scarborough, is the landing-place for passengers, etc., from the royal mail-steamers. Two-thirds of the island is still covered with primitive forests, comprising many varieties of hard-woods and ornamental trees. The geological formation is similar to that of Trinidad. The climate is considered salubrious; the thermometer ranges from 75° to 90°. The island produces sugar, rum, molasses, cocoa-nuts, cotton, coffee, and indigo; pimento also grows wild. T. was annexed to Trinidad 1889. In 1890 the revenue was $42,068; expenditure $44,969; debt, loan from Trinidad for construction of public works, $24,300; imports $113,738; exports $94,143. The people are mostly of African race.—Pop. (1890) 20,727.

TOBERMO'RY: see MULL, ISLAND OF.

TOBINE, n. *tŏ'bĭn* [Ger. *tobin;* Dut. *tabijn* (see TABBY)]: a stout twilled silk.

TOBIT, *tō'bĭt*, BOOK OF: one of the most curious and interesting of the Old Test. apocryphal books. It exists at present in Greek, Latin, Syriac, and Hebrew MSS., whose texts differ considerably, yet not materially. The oldest and most valuable is the Greek Septuagint; indeed, where the others depart from it, they possess little claim to respect. Since the argument of Nöldeke (*Monatsb. Berl. Ak.*, 1879, p. 45), the Greek text has been conjectured to be the *original.* It is not known when and where the book was written: Ewald selects Persia as the scene, and the middle of B.C. 4th c. as the date of its composition: the author he imagines to have been a Palestinian Jew who wrote in Hebrew, and conjectures that a translation of the work was made into Alexandrian Greek B.C. 1st c. But if the Greek text be the original, it can scarcely be referred to a date earlier than B.C. 2d c.; and Robertson Smith ascribes the authorship to a Jew of the eastern dispersion, writing perhaps in Egypt, but incorporating Persian elements in his story. That the contents of T. are not historical, is evident; yet till the period of the Reformation it was commonly received as such. Luther was the first to speak of it as a 'poetical,' i.e., imaginary, didactic production; and biblical critics since have generally agreed with him; though some contend for a historical basis. The leading incidents resemble in grotesque *miraculousness* the fantastic tales of the Arabian Nights. Tobit, sleeping outside the wall of his court-yard one night, is blinded by sparrows 'muting warm dung into his eyes;' his son Tobias is attacked while washing his feet in the Tigris, by a fish, which he kills, and under instruction from the angel Raphael secures from its liver and gall powerful drugs. The son then marries a Jewish maiden, Sara, seven of whose betrothed lovers had been successively carried off by an evil spirit, Asmodeus. Asmodeus is driven off by use of one of the drugs and with help of the angel, and then flies to the uttermost parts of Egypt, where he is bound. Old Tobit is cured of blindness by an application to his eyes of the other drug from the fish. Though the narrative is thus childishly absurd, the sentiments are often pious and didactic; the descriptions of social life are picturesque and apparently true.—For the place which this book holds in ecclesiastical use, see APOCRYPHA.

TOBOGGAN, n. *tō bŏg′găn:* sled made of a couple of thin planks fastened together, turned up in front, and shod with runners, originally used by the Indians of Lower Canada for carrying burdens over snow, but now extensively used in the sport of coasting or sliding down long slopes of frozen snow at great speed: V. to slide on a toboggan. TOBOG′GANING, n. *-găn-ĭng*, the exciting and favorite winter amusement of the Canadians with the toboggan *Note.*—The word *Toboggan* is said to be a corruption of Am. Indian *odabagen*, a sled. The form *tobaaken* (a sled) has been found by Skeat in an old English Micmac dictionary.

TOBOLSK, *tō-bŏlsk′:* government in the n.w. angle of Siberia; bounded n. by the Arctic Ocean, w. by the Ural Mountains, e. by the govts. of Yeniseisk and Tomsk; 531,980 sq. m.—nearly one-fourteenth of the whole Russian empire. Branches of the Ural and Altai Mountains form a hilly region in the w. and s.e.; but the govt. is largely a vast plain, sloping to the banks of the principal rivers and to the shores of the Arctic Ocean. The chief rivers are the Ob (q v.) and its great navigable affluents, the Irtish, Tobol, Om, and Toura. The soil is fertile in s. and middle districts; marshes covered with forests occupy the land n. of lat. 57°, and frozen marshes border the Arctic Ocean: see TUNDRA. The climate has great extremes; it is mild in the middle districts, very severe in the n., and warm in the s. Dogs, martens. ermines, silver and blue foxes, bears. deer, etc., eider-ducks, geese, ducks, etc., are principal animals. The chief crops are rye, oats, and barley. Agriculture employs the great mass of the inhabitants, except in the n., where hunting and fishing are general occupations. The luxuriant meadows of the south are taken advantage of for cattle-breeding. Timber, furs, and fish are chief articles of commerce. The people are mostly Russians; but there are also Ostiaks, Tartars, Bokharians, and Samoiedes.—Pop. (1882) 1,283,000; (1889) 1,313,400.

TOBOLSK′: town of w. Siberia, cap. of the govt. of T.; at the confluence of the Irtish and the Tobol; 1,976 m. e. of St. Petersburg, 1,535 m. from Moscow. It is well built, with timber houses and wide and regular streets, and its position on the two great rivers is picturesque; but its lower part is subject to almost annual inundation from the floods of the Irtish in spring. Its situation, considerably n. of the great commercial highway between Russia and Siberia, and distant from the more productive regions of the country, is unfavorable for commerce. T. contains a large prison, capable of accommodating 3,000 prisoners; and the convicts condemned to exile in Siberia are assembled at this town, and thence deported to various parts of the country. Several regiments are stationed here.—Pop. (1883) 20,130; (1888) 20,175; (1890) 21,336.

TOCANTINS, *tō-kân-tēnz':* important river of Brazil, rising in the province of Gojas, flowing n. through the province of Para, and joining the Para (q.v.), the s. branch of the estuary of the Amazon, 130 m. from the Atlantic. Its principal affluent is the Araguay, which joins it in lat. 6° s., and has a longer course, with greater volume of water than the T. The T. at its junction with the Araguay is 5,500 ft. wide; at its mouth it is 8 m. wide; total length, 1,100 m. The navigation, which is by trading-boats resembling floating houses, is dangerous, on account of numerous falls, sand-banks, and rapids. Boats descend from Porto Imperial (lat. 10° 30′ s.) to the mouth of the T. in 20 to 30 days; the upward voyage occupies four or five months.

TOCHER, n. *tŏk'ėr*, but in Scotch the *ch* is guttural [Gael. *tochar*, a marriage portion]: in *Scot.*, a marriage portion given by a father on the marriage of his daughter (see MARRIAGE); a dowry: V. to give a dowry to. TOCH'ERING, imp. TOCHERED, pp. *tŏk'ėrd.* TOCH'ERLESS, a. having no marriage portion.

TOCQUEVILLE, *tŏk'vĭl* or *tok-vēl'*, ALEXIS HENRI CHARLES CLEREL, Comte DE: French statesman, in the first rank of writers in the 19th c. on the science of politics: 1805, July 29—1859, Apr. 16; b. Verneuil, dept. of Seine-et-Oise. His father was the representative of an old family, the Clerels, proprietors of Tocqueville in Normandy: his mother was granddaughter of Malesherbes, academician, political writer, and magistrate, who defended Louis XVI. at the bar of the convention, and whose intrepidity was punished by the beheading of himself and all the most distinguished of his relations. Madame de T. and her husband narrowly escaped the guillotine by the fall of Robespierre; but they did not emigrate, like other royalist families, and they preserved their property. At the restoration 1815, the father of De T. reassumed the title Count. De T. was called to the bar at Paris 1825; and, after a short tour in Italy, entered the magistracy as *juge auditeur* at Versailles. In this situation he carefully studied the administrative system of France; and, struck by the perpetual recurrence of revolution, gave much thought to political questions. In 1831 he resigned his appointment at Versailles, and with his colleague there, Gustave de Beaumont, accepted a govt. mission to the United States, to report on the penitentiary system. The commissioners, after their return to Europe, published their report (*Du Système pénitentiaire aux États-Unis*, 1832; Eng. transl., Philadelphia 1833)—an admirable work, which modified French ideas of prison-discipline. But a more important result appeared 1835, when De T. published his great work, *De la Démocratie en Amérique*

(Eng. transl. by Reeve, London 1835). In his introduction, he sought to show that a great democratic revolution has for centuries been going on in Europe. There is a general progress toward social equality, which must be regarded as a providential fact. In France it has always been borne on by chance, the intelligent and moral classes of the nation never having connected themselves with it, in order to hold and guide it. In the United States he found that the same revolution has been going on more rapidly than in Europe, and has indeed nearly reached its result in the absolute equality of conditions. There, accordingly, he thinks is shown what is about to result in Europe. He points out that the people in the United States may be strictly said to govern: they make the laws and they administer them. He draws from what he has observed the conclusion that democracy may be reconciled with respect for property, deference for rights, safety to freedom, and reverence for religion. He does not propose the laws and manners of the United States for other democratic peoples. He merely seeks, by a faithful picture of an existing democracy, to allay the dread of democratic progress, and to induce those at the head of affairs to recognize it as irresistible, and to seek to control it by wise concessions. *The Democracy* made at once an immense sensation. The accuracy of the statements, the skill with which the matter had been digested, and the beauty of the style, were praised by critics. The author was hailed as the continuator of Montesquieu, and the greatest political writer of his time. He became successively a member of the Acad. of Moral Sciences and of the French Acad. In 1835 De T. visited England, where his work had made him known, and where he received enthusiastic welcome from the leaders of the whig party. In the same year he married Miss Mottley, an Englishwoman. He shortly afterward, by a family arrangement, entered into possession of Tocqueville. He stood, 1837, as candidate for the representation of Valognes in the chamber of deputies. His opponent was a retired mill-spinner, who raised the cry of 'No nobles' against him. De T. was defeated; but two years later he had become a great favorite with his neighbors, the Norman farmers, and they returned him to the chambers by an overwhelming majority. As a speaker, De T. had no gifts, but he exercised great influence on the legislature. Immediately after the Revolution, he was the most formidable opponent of the socialists and extreme republicans. He opposed Louis Napoleon, as a man who believed in his right to the throne as firmly as Charles X. De T. became, however, 1849, vice-pres. of the assembly; and, June to Oct. in the same year, minister of foreign affairs. At this time he vindicated the policy of the expedition to Rome, on the ground, it must not be forgotten, that it would secure liberal institutions to the States of the Church. After the *coup d'état*, he returned to Tocqueville, where he engaged in agricultural pursuits. He there wrote *L'ancien Régime et la Révolution* (Par. 1856; Eng. transl., London and New York

1856), a work worthy of his fame. In 1858, June, he broke a blood-vessel, and left the bleak coast of Normandy for a warmer climate, at Cannes, where he died. T.'s *Œuvres et Correspondance Inédites* were pub., 2 vols. (1860), by his friend De Beaumont, who prefixed a biographical notice (Eng. transl., London and New York 1861).—De T. was the first to present a systematic philosophical discussion of the political institutions of the United States. His great work shows rare insight, unbiased judgment, clear vision of fundamental principles, and a profound tracing of them in their systematic and orderly development in political institutions.

TOCSIN, n. *tŏk'sĭn* [F. *tocsin*—from OF. *toquer*, to touch, to strike, and *sing*, a sign, a bell (see TOUCH and SIGN)]: an alarm-bell; a signal given by the ringing of a bell.

TOD, n. *tŏd* [Icel. *toddi*, a flock or ball of wool: Ger. *zote*, a lock or flock of wool; Dan. *tot*, a bunch of flax]: a bunch of anything fibrous, as hay; an old weight of wool of 28 lbs.; in *Scot.*, the fox—probably so called from its bushy tail; in *OE.*, a bush; a thick shrub: V. in *OE.*, to yield in weight.

TODARS, *tō'dėrz*, or TODAWARS, *tō'da-wėrz*, or THODAS, *thō'das*, or TUDAS, *tū'daz:* remarkable pastoral race inhabiting the upper part of the Neilgherry Hills (q.v.), in s. Hindustan, claiming to be the aborigines of the whole hill country: see INDIA—*Inhabitants*. They are rapidly diminishing in number, chiefly through the practice of Polyandry (q.v.) and their not allowing intermixture with other races: in 1881 they numbered 675. They are of dull copper color, tall, well proportioned, and athletic, with finely molded limbs and bold, independent carriage; the nose aquiline, with black, bushy hair and beard. The dress of the men consists of a single toga, worn so as to leave the right arm free, not unlike the plaid of the Scottish highlander. The T. are indolent and dirty. The buffalo is their great dependence; they attempt no culture of land, obtaining what grain they require from the agricultural tribes, who pay it in the shape of tribute (*goodoo*) (though often rather as a kindness) for their lands, over which the T. assert an imaginary right. The only use the T. get of their buffaloes, besides their milk, is to furnish sacrifices to the manes of the dead. They are wont to salute the sun at his rising and setting, and believe that the soul after death goes to the 'great country.' They worship only 'ideal' gods, without images. They have never been known to steal. Their language is of the Dravidian stock; it has no written character. They are strangely allowed to collect their tribute of grain, by which they are supported in idleness and plenty.—See *Statistical Memoir of a Survey of the Neilgherry Mountains* (1861); Harkness's *Description of a Singular Aboriginal Race* (1832); Burton's *Goa and the Blue Mountains* (1861); Tyler in *Nature* (1873).

TO-DAY, n. ad. *tô-dā':* see under To.

TODD, *tŏd*, **JOHN**, D.D.: author and Congl. minister. 1800, Oct. 9—1873, Aug. 24; b. Pittsfield, Mass. He graduated at Yale 1822; kept a school one year; studied theol. at Andover, and was ordained minister 1827. He held Congl. pastorates successively at Northampton, Mass. (1833), Philadelphia (1836), First Church, Pittsfield, Mass. (1842–72, when he retired on account of age). He had a part in founding Mt. Holyoke Female Sem. He was author of nearly 30 vols., and some of his writings had an enormous circulation: many were translated into various languages—German, French, modern Greek, Dutch, Danish, Italian, Arabic, Armenian, Turkish, and Tamil. He won great distinction also as preacher and lecturer, and was a frequent contributor to religious periodicals. Among his most successful didactic works were: *Lectures to Children; Student's Manual; Hints to Young Men; Hints and Thoughts for Christians.*

TODD, **THOMAS**: jurist: 1765, Jan. 23–1826, Feb. 7; b. King and Queen co., Va. He served as a soldier from Va. during the latter part of the revolution; afterward removed to Ky., studied law, and became clerk of the district court, and later of the court of appeals; 1801–06 was judge of the court of appeals; 1806–7 chief-justice of Ky.; and from 1807, Mar. 3, until his death, associate justice of the U. S. supreme court. He died at Frankfort.

TODDLE, v. *tŏd'dl* [O. Dut. *touteren*, to tremble, to see-saw: Ger. *zotteln*, to reel, to stagger (see TOT 1)]: to walk unsteadily, or with short tottering steps, as a child: N. *familiarly*, a walk or saunter. TOD'DLING, imp. *-dling*. TODDLED, pp. *tŏd'dld*.

TODDY, n. *tŏd'dĭ* [Hind. *tari*, *tadi*, the juice of the Palmyra tree; *tar*, a palm-tree: the sound of the *r* in the Hind. word is represented by *d* in Eng.]: the juice or sap drawn from various kinds of palms in the East Indies; a spirit or liquor prepared from it; a mixture of spirits and hot water sweetened; punch: *grog* is a mixture of spirits and cold water (see SPIRIT). TODDY-LADLE, a small ladle or deep spoon for mixing toddy in the tumbler or bowl, and for lifting a portion of it into a wine-glass.

TODI, *tō'dē* (anc. *Tuder*, *Tudertum*): ancient town in central Italy, province of Perugia; about 24 m. s. of the city of Perugia, on an elevation overlooking the Tiber. Ruins of the Etruscan wall which surrounded it, and of an old Roman temple, are visible. It contains a cathedral with frescos by Le Spagna, and the beautiful church of S. Maria della Consolazione, designed by Bramante, and considered by many not only his best work, but one of the finest buildings of Italy.—Pop. about 15,000.

TODLEBEN, *tŏt'lā-bĕn* (or TOT'LEBEN), **EDUARD IVANOVICH**: Russian general of engineers: 1818, May 20—1884, June; b. Mitau, Russian province of Courland; of German extraction. After studying at Riga, he entered the College of Engineers at St. Petersburg. He was second-capt. in the engineer corps when the Russian army entered the Danubian Principalities 1853, and served in the campaign of the Danube under General Schilders. His genius as a military engineer was discovered before the Russian army crossed the Pruth, on its retreat from the Principalities; and when the French and English troops undertook the siege of Sebastopol, Col. T. was sent to assist in its defense. His principle was to watch the works of the allies, and to establish against them on every point a superiority of fire, by multiplying the number and increasing the calibre of his guns. The prodigious activity displayed by the Russians in making good the damage by the heavy fire of the enemy astonished the allied army. Massive earthworks, mounted with formidable batteries, rose as by magic at each threatened point. According to T., the defense was rapidly asserting an engineering superiority over the attack. The Malakoff, however, was carried by assault, and the allies entered Sebastopol (see the story of the war in Kinglake's work, *The Invasion of the Crimea*). At the battle of Inkermann, T., who was on the spot by chance, seeing that the Russian artillery was in danger of being taken, promptly halted a regt., caused four guns to open fire on the allies, and gave time to the artillery to retreat. During the latter part of the siege, he was wounded in the leg. He wrote a history of the war in the Crimea, entitled *Défense de Sebastopol*, which gives a thoroughly Russian account of the Crimean war—trustworthy in all that relates to the Russian army and to the work of the siege. For services in the siege, he was created a general and decorated. In 1865 he visited England, and was cordially received. He was called to undertake the siege of Plevna, which, after a brilliant defense, he took. He was subsequently made commander-in-chief of the Russian army in Bulgaria.

TODMORDEN, *tŏd-mŏr′dĕn:* market-town of England, partly in the county of Lancaster, partly in the W. Riding of Yorkshire; 8 m. n.n.e. of Rochdale, about 207 m. n.n.w. of London; on the Manchester railway. The town is well built; has several churches and schools, and manufactures of cotton. Coal abounds in the vicinity. The town comprises territory belonging to three townships.—Pop. (1881) 23,862; (1891) 24,725.

TO-DO, n. *tû-dô′* [*to* and *do*]: *familiarly,* hurry; bustle; commotion; ado.

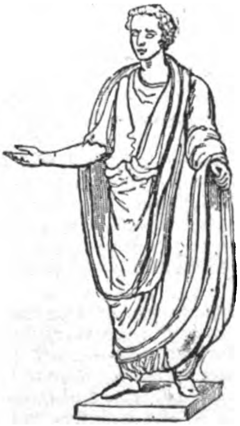
TOE, n. *tō* [Icel. and AS. *tá;* Dut. *teen;* Low Ger. *taan,* a toe: perhaps allied to Icel. *teina,* a shoot: Dut. *teen,* a twig: AS. *tán,* a shoot, the toes being regarded as the twigs or branches of the foot]: a digit of the foot, corresponding to a digit or finger of the hand; one of the foreparts of the paw or foot of a beast; the forepart of a hoof, as of a horse: V. to touch with the toes, as to *toe* the mark. **Toed**, a. *tōd,* having toes. **Finger-and-toe**, a disease in turnips, when, instead of bulbs, they fork into *finger-and-toe*-like divisions.

TOFFY, n. *tŏf'fĭ*, or **TOF'FEE**, n. *-fĭ:* a hard-baked candy or sweetmeat, made of molasses or sugar mixed with butter, and boiled to a consistency; called *tuffy* in the United States.

TOFORE, ad. *tû-fōr'* [AS. *toforan*]: in *OE.*, before; formerly: PREP. in *OE.*, before.

TOFT, n. *tŏft* [Norw. *tuft*, a clearing]: in *OE.*, open ground; a plain; a knoll; in *law*, a messuage or homestead.

TOGA, n. *tō'gă* [L. *toga*, a gown—from *tego*, I cover]: a gown; the loose gown or mantle worn by the anc. Romans. **TO'GATED**, a. *-gā-tĕd* [L. *togātus*, gowned], also in OE., **TO'GED**, a. *-gĕd*, dressed in a gown; wearing a gown. **TOGA VIRILIS**, *vĭ-rī'lĭs* [L. *virilis*, manly]: the gown assumed by Roman youths at the age of fourteen. **TOGS**, n. plu. *tŏgz*, in *slang*, clothes. **TOGGED OUT**, *tŏgd*, dressed up, as if for a party.—The *Toga* was the principal outer garment of the Romans, originally perhaps the only one: subsequently an under-garment, the *tunic*, was added. It was probably of Etruscan origin, yet it came to be considered the distinctive badge of the Roman citizen, whence the Roman people are called *togati*, or *gens togata;* consequently, when the Cisalpine Gauls received the rights of citizenship, their country was spoken of as *Gallia togata*, in opposition to Transalpine Gaul, or *Gallia braccata* (breeched). At first the T. was apparently semicircular in shape—so, at least, say Dionysius, Quintilian, and others; but afterward, when it came to be an elaborate and complicated dress, it must have been a smaller segment than a semicircle. The mode of wearing it is difficult to describe, and required considerable art to make the folds fall gracefully. It was woolen cloth, and, except in the case of mourners, was white. Accused persons sought to excite sympathy by going about in a soiled (*sordida*) and unsightly toga; while those who were seeking office were wont to dress themselves in garments artificially whitened with chalk; hence their name *Candidati* (lit., shining ones), candidates. The *toga prætexta* had a broad purple border, and was worn by children and by most, though not all, of the magistrates. The *toga picta*, so called from being embroidered, was worn by generals receiving their 'triumphs.' Under the emperors, the T. as an article of common wear fell into disuse, the Greek *pallium* and other garments being used instead; but it continued to be used by officials on solemn or festive occasions.



Roman Toga.

TOGETHER, ad. *tŭ-gĕth'ėr* [AS. *togædere*, together: Dut. *gaderen*, to gather, to collect]: in company; in the same place; in the same time; in concert; in union; without break. TOGETHER WITH, in union with.

TOGGENBURG, *tog'ghĕn-bûrg*, or TOCKENBURG, *toćh'ĕn-bûrg:* district in Switzerland, in the canton of St. Gall (since 1803); formed by the long and fertile valley of the Thur. It was formerly governed by counts of its own, who ranked as the richest and most powerful land-proprietors in the country. On the extinction of their line 1436, the possessions passed to the Barons of Rasen, who sold them 1469 to the abbot of St. Gall. The valley is thickly peopled by an industrious race, who manufacture muslin and cotton. The most interesting spot in the region is Wildhaus, in the Johannisthal, a little mountain village more than 2,000 ft. above the level of Lake Zürich, where Ulrich Zwingli, Swiss reformer, was born.

TOGGERY, n. *tŏg'gėr-ĭ* [L. *toga*, a gown]: in *familiar language*, clothes; garments.

TOGGLE, or TOGGEL, n. *tŏg'gl* [probably from Dut. *tokkelen*, to touch; or Ger. *stock*, a stick]: among *seamen*, a small wooden pin or short bar of wood tapering toward both ends, with a groove round its centre, placed through bight or eye of a rope in order to hold it in its proper position.

TOG'GLE JOINT: a knee-joint or elbow-joint; joint formed by two pieces (bars or plates) articulating endwise. The T. J. may be represented by the leg flexed at the knee, or the arm flexed at the elbow. In mechanics, this joint is used by applying power (e.g., by means of a screw) against the 'knuckle' or point of flexure, thus producing a powerful pressure through the extension of the two bars or leaves. The T. J. is employed in different kinds of presses, thence called toggle presses. The T. J. is utilized in the Stanhope printing-press, the platen being there depressed by the toggle and raised by springs. It is used also in making electrotype molds from type, and in hay-presses, cotton-presses, etc.

TOGS, n. plu. *tŏgz:* see under TOGA.

TOIL, n. *toyl* [O. Dut. *tuylen*, to till the ground; *tuyl*, agriculture, labor: comp. Gael. *toil*, will, inclination (see TILL 3)]: fatiguing labor; labor oppressive to the mind or body: V. to labor with pain or fatigue; to work with fatigue. TOIL'ING, imp.: ADJ. laboring with fatigue. TOILED, pp. *toyld*. TOIL'ER, n. *-ėr*, one who toils. TOIL'FUL, a. *-fûl*, wearisome. TOIL'LESS, a. *-lĕs*, free from toil. TOIL'SOME, a. *-sŭm*, laborious; attended with fatigue or pain; wearisome. TOIL'SOMELY, ad. *-lĭ*. TOIL'SOMENESS, n. *-nĕs*, state of being toilsome or laborious.—SYN. of 'toil, n.': work; labor; exertion; employment; occupation; task; travail; drudgery.

TOIL, n. *toyl*, usually in the plu. TOILS, *toyls* [F. *toiles*, toils, something to inclose or entangle wild beasts in; *toile*, cloth—from L. *tēla*, a web—from *tĕxĕrĕ*, to weave]: a net or snare; a web or string spread for taking prey.

TOILET, n. *toyl'ĕt* [F. *toilette*, toilet-cloth, toilet—from *toile*, cloth (see TOIL 2)]: a cloth thrown over the shoulders while dressing the hair or beard; the cloth that covers a dressing-table—hence, the dressing-table itself; mode or operation of dressing; all matters connected with personal cleanliness and the adjustment of articles of dress—in these last two senses also spelled TOILETTE. TOIL'INETTE', n. *-ĭ-nĕt'* [F.]: a cloth the weft of which is of woolen yarn, and the warp of cotton and silk. TO MAKE ONE'S TOILET, to dress.

TOISE, n. *toyz* [F. *toise*, a fathom: It. *tesa*, tension—from L. *tensus*, pp. of *tendo*, I stretch—as if measured by the width of the outstretched arms]: old French measure of length, equal to 1·94903659 metres, or 6·3946 Eng. feet.

TOKAT, *tō-kât':* decayed town of Turkey in Asia, w. of Trebizond, 60 m. from the s. shore of the Black Sea; at the mouth of a defile, on the banks of a small stream. It is inclosed by mountains on three sides, so that in summer the heat is intolerable. Gardens and vineyards extend along the slopes of the valley above the town. The town consists principally of wooden huts, disposed in narrow and dark streets. It formerly had considerable trade, but this has declined. Extensive copper-furnaces, however, in which copper ore, brought from near Diarbekir, is smelted, still employ many persons. Cotton-printing and dyeing also are carried on.—Pop. 35,000.

TOKAY, n. *tō-kā'*, a highly prized wine produced from vines grown on the Hegyallya Mountains n. and n.e. of *Tokay*, in Hungary. The T. wine-district comprises about 15,000 acres, the produce from the Mezesmali, a detached rounded eminence near Tokay, being most esteemed. Great care is bestowed on the proper assortment of the grapes (never gathered till fully ripe); also on preparation of the wine—of which about 34 sorts are reckoned; but all may be grouped into the two classes, sweet and dry. The wine is brownish yellow while new, changing to a greenish hue as it grows older. The average annual produce of the T. vineyards is 1,500,000 imperial gallons of the dry, and 50,000 gallons of the sweet, wines. T. wine has immense reputation on the continent for its restorative and tonic qualities; and so much is it esteemed in Hungary, that every considerable proprietor for miles round makes it a point to acquire some property in this vine-district, that he may be able to procure his wine from his own vineyards. On this account, genuine T. (specially the more valuable sweet or imperial T.) is obtainable by wine-merchants in small quantity only, and is largely mixed with inferior wines. The vine-gathering is celebrated at Tokay, Maad, and Tallya, chief places of the district, as a national fête, to which the magnates of Hungary with their families flock from all quarters; and during the festivity, many times more than the whole value of the vintage is expended. The crowd of visitors is swelled largely by the wine-dealers and medical agents, who sometimes give extravagant prices for good qualities of wine. Large quantities of 'imitation' T. are made by French and German chemists, and sent to all parts of Europe, not excepting Hungary itself, so that purchasers need to guard against imposition.

TO-KEI': a variant of Tōkiō (q.v.).

TOKEN, n. *tō'kn* [Goth. *taikns;* Ger. *zeichen*, a mark, a token: Icel. *teikna;* Dan. *tegne*, to mark, to draw: Dut. *teeken;* Icel. *teikn*, a token]: something meant to represent another thing; a mark; a sign; an indication; a symptom; a memorial of friendship; a stamped piece of metal used as coin, but worth much less than its nominal value, and intended to serve a temporary purpose: in the *Scotch Presb. churches*, a stamped metal ticket of admission to the Lord's Supper: in *printing*, ten and a half quires of paper: V. in *OE.*, for BETOKEN. TO'KENLESS, a. *-lĕs*, without a token.—*Tokens*, or stamped pieces of metal or other material intended to serve as evidences of value which they did not possess, first came into use in England in the reign of Henry VIII., in the lack of any authorized coins for the fractions of a penny; and in the reign of Elizabeth, stamped tokens of lead, tin, and even leather, issued by vintners, grocers, and other tradesmen, passed largely from hand to hand, and were payable at the shops where issued. The corporations of Bristol, Oxford, and Worcester also had their tokens. In the face of later royal prohibitions, private tokens, principally of brass, continued to circulate, especially during the civil war. Numerous tradesmen's tokens, mostly of copper, were again struck during the scarcity of money at the close of the 18th c. On account of the scarcity of current silver money, previous to the new coinage of 1817, silver pieces known as Bank Tokens, of the respective values of 5*s*., 3*s*., and 1*s*. 6*d*., were issued by the Bank of England: they were called in on the revision of the coinage.—See Chambers's *Book of Days*, I. 535.

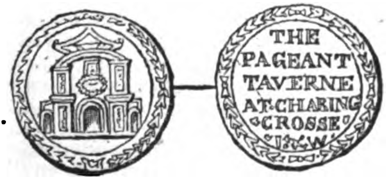


Fig. 1.—Token of the Triumph, or Pageant Tavern, Charing Cross, 1661.

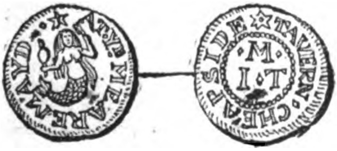


Fig. 2.—Token of the Mermaid Tavern, Cheapside, London, about beginning of 17th century.

TŌKIŌ, *tō'kyō* ('Eastern Capital,' as distinguished from *Saikiō* (Kioto), the 'Western Capital'): chief city, and since 1869, March 26, cap of Japan; in the e. of the main island of the Japanese group, on both banks of the Sumida, a large and rapid river (called sometimes *O-gawa*, or '*The* River'), spanned by six wide bridges (varying in length from 750 to 1,050 ft.), at the head of the Bay of Yedo; and traversed by a vast network of canals: lat. 35° 40′ n., long 139° 47′ e.: area about 28 sq. m., nearly equal to that of Paris.—Pop. (1889) 1,138,546; (1891) 1,155,290. Until 1868, Sep. 13, i.e., during the continuance of the Tokugawa (q.v.) shogunate, T. was known as YEDO ('River Door'). It was originally a rude fortress, founded 1456, surrounded by a few scattered villages, much of the more level parts of the present city being under water, or a mere succession of lagoons which have since been filled in. In 1598, Iyeyasu, founder of the Tokugawa line of Shoguns, laid out a city here and made it his capital. Under the shoguns, T. (Yedo) was divided into three parts: (1) The *O-shiro* or Castle, ramparted and moated, area 1·7 sq. m., circumference nearly 5 m. Here was the shogun's palace—where the mikado also resided when he removed his court to T. In 1873, May, this palace was burned down, and the emperor removed to the Yashiki, or mansion of the Prince of Kishiu, where he continued to reside until the recent completion of his own new palace. (2) The *Soto-shiro*, the portion outside the castle, also ramparted and moated. In this space chiefly were situated the Yashikis of the daimios, or territorial nobles, who with many thousands of their retainers were compelled to spend a large portion of the year in Yedo, under the eye and control of the shogun. (3) The *machi*, or tradesmen's part, extending all round the Soto-shiro, and across the river. For administrative purposes T. is now divided into 15 *ku* or districts, two of which, Honjo and Fukagawa are e. of the river. Kojimachi in the very centre of the city contains the castle, the parade-ground, most of the government offices, courts of justice, foreign legations, and the *Kobu-dai-gaku*, commonly called the Imperial College of Engineering (now a dept. of the univ.), with a large and efficient staff of foreign professors. North of the castle and between the two moats lies Kanda; in this district are situated the Nobles' School, and the Nobles' Club (both large buildings in European style), and the Imperial Univ., which, when founded 1856, bore the curious name *Ban-shō shirabe-jo*, or 'Place for examining Barbarian Writings.' This was changed 1868 to *Kai-sei-jō*, or 'Place for transforming and completing,' and is now *Dai Gaku*, or (place of) 'Great Learning.' In this part of the city is also the temple of Kanda or *Kanda Mio-jin*, where are worshipped *O-na-muchi*, the aboriginal deity of the country (said to have abdicated in favor of the mikado's ancestors, when they descended from heaven), and his adopted brother. Not far from this is *Sei-do* or the temple of Confucius, 'charmingly situated on a hill-side, in the midst of a splendid grove of trees.' Under the shoguns this was the univ. for the study of Chinese literature. It is now a public library of native, Chinese, and foreign books. Near Seido is the public park of Uyeno, where the museum is, and where the 'exhibition' was held. This property belonged originally to the Todo family, but was taken by the shogun, 1625, as a site for a set of Buddhist temples that should surpass all others in Japan. The main temple (burned down 1868 during a bloody battle between the imperialists and the supporters of the shogun) is said to have been 'one of the chief triumphs of Japanese architectural skill, and was considered the metropolitan temple of all Japan.' The high priest, always a son of the reigning mikado, was kept here for political reasons. T. abounds in temples (both Buddhist and Shinto), the most popular of which is perhaps the temple of K'wan-on (commonly called the 'goddess of mercy'), in Asakŭsa, to which thousands of the middle and lower classes daily resort for devotion, but chiefly for pleasure. Booths and stalls and 'shows' of all sorts abound in the neighborhood. In the public gardens of Shiba are the mortuary temples of seven of the Tokugawa shoguns, standing in the extensive and finely wooded grounds of the temple of *Zo-zo-ji*, which was under the protection of Iyeyasŭ. The main building was destroyed by fire (the work of an incendiary) 1874, Jan. 1.

T. stands in a great plain extending n. and s. about 100 m., and from the coast to the mountains 20 to 60 m. This plain, one of the most fertile in Japan, is tilled with great skill and labor, irrigation and manuring being adopted to the fullest extent. It is traversed by many large rivers, from one of which an abundant water-supply is brought 40 m. to T. Smaller streams intersect the plain in every direction, and form rich and lovely valleys, the ridges between which rise at very few places more than 200 ft. above sea level. T. is connected with Yokohama, Kioto, Ozaka, Kobe, etc., by several lines of railway; and a large extent of telegraphic line now gives it close communication with the s., n., and w. of the empire; and with the outside world by cable from Nagasaki.

The main body of the new imperial army is located and drilled in the capital. Its creation after the great revolution of 1868 was superintended by French officers. The Military College is still under French instructors. There is a large arsenal, well stocked with excellent modern machinery, in T.; also a naval college with British instructors, where cadets for the marine service receive a good scientific education and practical training. The Medical School, a part of the university, has a large and efficient staff of German professors. In 1889 T. had 328 public, and 443 private primary schools. Horse-cars run along the *Tōri*, or principal street. The police force is numerous and effective, and there are fire companies of about 2,000 men. Gas is used for street and shop lighting. Numerous newspapers (including more than a dozen dailies, edited and conducted with singular ability) and many periodicals and magazines are published, though the press (as elsewhere in

Japan) suffers severely from govt. censorship. The Japanese parliament or 'diet' meets here, and T. is the intellectual as well as the political centre of the country.—In 1869, Jan. 1, T. was opened to foreign commerce, but owing to the shallowness of the Bay of Yedo, the proximity to Yokohama (18 m.), the chief seaport of the country, and other causes, direct foreign trade is small; and Tsŭkiji ('made land'), as the foreign settlement is called, is practically abandoned to the missionaries.

T. has several woolen, silk, and paper mills; and much is done in bronze-work, porcelain-painting, manufacture of toys, fans, curios, etc. During the winter, fires are almost nightly occurrences, and the whole city has been burned over several times. In 1601 the whole city was laid in ashes: 1657 (it is said) 107,046 persons lost their lives; 500 daimio-mansions, 770 hatamoto-residences, 350 temples, and 1,200 streets are said to have been destroyed. In 1668 another great fire almost wiped out the city. In 1855 a single conflagration destroyed fully one-fourth of the city, and in 1876 in one night 8,000 houses were burned. This arises from the universal use of wood in building, and the slightness of construction. Brick and stone and foreign methods of construction, however, are now rapidly superseding native materials and methods, especially in the business part of the city. The whole business part of the city is studded with clay fire-proof *kura* or store-houses, into which all the chief valuables are hurriedly thrust on the breaking out of a fire in the vicinity, and the doors and windows cemented with clay which is kept in readiness—lighted candles having been placed inside before closing the last door in order to exhaust the inflammable oxygen of the inclosed air.

Earthquakes also have been destructive. One in 1703 caused 37,000 deaths. Another, 1855, Nov. 11, threw down 14,000 dwellings, and 16,000 *kura* or fire-proof godowns, and caused a loss of 100,000 lives.

Under the shoguns the pop. of T. must have been very large, owing to the large bodies of military retainers which the daimios were compelled to bring and keep with them during their long compulsory annual sojourn in the city. The pop. has been stated as high as several millions, but it is probable that it never exceeded that of the present city under the new *régime*.

Much of the glory of old T. (Yedo) has vanished, many stately palaces and rich temples having been burned to the ground, or allowed to decay. The new buildings are of European or semi-European style; fire-eating, two-sworded men no longer throng the streets, and the Kago and Norimono have disappeared before the jin-riki-sha and the horse-car. But the chief natural beauties of the city remain—the 30 m. of tortuous moats, with their summer blaze of lotus-flowers, and the exquisitely beautiful parks and gardens, with their luxuriant flowers and rich wooding.

Brit. *Consular Reports;* Adam's *History of Japan;* Griffis's *Mikado's Empire;* Aimé Humbert's *Japon Illustré;* Maurice Dubard's *Japon Pittoresque;* Sir Rutherford Al-cock's *Capital of the Tycoon;* Oliphant's *Narrative of Lord Elgin's Mission; The Treaty Ports of China and Japan;* Mossman's *New Japan;* Satow and Hawes's *Guide to Japan;* Rein's *Japan.*

TOKUGAWA, *tō'kû-gâ'wâ:* family name of the 'dynasty' or line of Shoguns (q.v.), or commanders-in-chief, who virtually ruled Japan from 1603, when the mikado appointed Tokugawa Iyeyasŭ (1542–1616) to the office of *Sei-i-tai-shogun,* or 'Barbarian-subduing-great-general,' to 1868, when the office of shogun was abolished, the feudal system came to an end, and the mikado took the government into his own hands. The Tokugawas are said to be descendants of the Minamoto, powerful military family which sprang from Emperor Sei-wa in the 9th c. At the time of his appointment as shogun, Iyeyasŭ was lord of Mikawa, and of the eight provinces of the Kwantō (the region e. of the Hakone range of mountains) which he had received in 1590 from Taiko-sama (q.v.). From 1598 the capital of the T. was Yedo, now Tōkiō (q.v.).

TOLA, n. *tō'lă* [Skr. *tolna,* to weigh]: in *India,* a weight for gold and silver, about 180 grains troy.

TOLAND, *tō'land,* JOHN: English deistical writer: 1669 (or 70), Nov. 30—1722, May 11; b. near the village of Redcastle, county of Londonderry, Ireland. His parents were Rom. Catholics, and he was brought up in that faith. His baptismal name was Janus Junius; but ridicule at school led him to change it to John. He entered the Univ. of Glasgow 1687, but removed to the Univ. of Edinburgh, where he took the degree M.A. 1690. Thence he passed to Leyden, where (having abandoned at Edinburgh the Rom. Cath. faith) he began theological studies with a view to the nonconformist ministry. After about two years he returned to England, and resided at Oxford, where his vanity, and the boldness of his opinions on religion, attracted notice. Here he prepared in great part the work *Christianity Not Mysterious* (London 1696), in which he avowed his principles. The work made a sensation in the theological world, was censured by convocation, and led to several replies; and in the following year T. returned to Ireland. There he was received as unfavorably as in England, and his book was burned publicly by the common hangman, by express vote of the Irish parliament. T. returned to London, where he published a defense; but soon turned from theological to political and literary subjects. His pamphlet *Anglia Libera,* on the succession of the House of Brunswick, led to his being received with favor by the Princess Sophia at the court of Hanover, and to his being sent on a kind of political mission to some German courts.

During his residence abroad, he published 1702 a vindication, in a moderate tone, of his book against the judgment of the convocation; but 1705, he fully avowed himself a pantheist, being emboldened by the patronage of Harley, in whose service he had engaged as a political pamphleteer, and by whom he was sent to Holland and

Germany 1707, in a capacity which, however disavowed, was plainly that of a political spy. He returned to England 1710; and having separated from his patron, he engaged as a partizan pamphleteer on the side of Harley's adversaries. His after-life was that of a literary adventurer, and was checkered by literary conflict and pecuniary struggle—forming one of the most painful chapters in Disraeli's *Calamities of Authors.* He died at Putney.—Of his many works, a few are the following: *Christianity Not Mysterious: a treatise showing that there is nothing in the Gospel contrary to Reason, nor above it* (Lond. 1696); *Apology for Mr. Toland* (1697); *Life of Milton,* prefixed to Milton's works, 3 vols. folio (1698); *Anglia Libera, or the Limitation and Succession of the Crown explained and asserted* (1701); *Vindicus Liberius, or Mr. Toland's Defence of Himself against the Lower House of Convocation* (1702); *Socinianism truly stated* (1705); *Reasons for naturalizing the Jews* (1714); *State Anatomy of Great Britain* (1714); *Nazarenus or Jewish, Gentile, or Mahometan Christianity* (1718).

TOLBOOTH, n. *tōl'bôth:* a booth or stall where taxes were collected; a town jail or prison.

TOLD, v. *tōld:* pt. and pp. of TELL (q.v.).

TOLEDO, n. *tō-lē'dō:* a sword-blade of the finest temper, originally from *Toledo,* in Spain; a sword having such a blade.

TOLEDO, *tō-lē'dō:* city, port of entry, and cap. of Lucas co., O.; on the Maumee river, and on the Wabash and Erie and the Miami canals, and the Cincinnati Hamilton and Dayton, the Columbus Hocking Valley and Toledo, the Cincinnati Jackson and Mackinaw, the Flint and Père Marquette, the Lake Shore and Michigan Southern, the Michigan Central, the Northwestern Ohio, the Ohio Central, the Toledo Ann Arbor and Northern Michigan, the Toledo Columbus and Cincinnati, the Toledo Findlay and Springfield, the Toledo St. Louis and Kansas City, the Wabash, and the Wheeling and Lake Erie railroads; 53 m. s.s.w. of Detroit, 92 m. w. of Cleveland; 24 sq. m. As a commercial centre, T. occupies an unusually advantageous position. It is 5 m. from the mouth of the Maumee river in Maumee Bay, the w. extremity of Lake Erie; and 8 m. from the lake proper: it thus has direct communication with all ports and important places on the lake. The beautiful harbor will accommodate the largest vessels, and the river and bay afford a safe channel from the city to the lake. The numerous railroads and the two canals are factors of vast importance in the development of the city's commerce and trade; yet, much as they relieve the pressure on the river, bay, and lake traffic, that traffic has increased so rapidly that the channel is entirely inadequate to the demand on it. In this emergency the federal govt. has come to the aid of the city, and is (1892) constructing a new and straighter channel, which will cost when completed at least $3,000,000. T. is the port of the Miami customs district. In the year ending 1890, June 30, imports of merchandise were in value $205-

720, and domestic exports $1,608,296. Exports included corn, 2,528,342 bushels, valued at $908,027; oats, 20,050 bushels, $5,015; wheat, 357,251 bushels, $277,585; bituminous coal, 23,287 tons, $40,808; and hewn lumber, 1,208,500 cubic ft., $375,775. Of the foreign shipments, $13,993 were in American steam-vessels, $59,072 in American sailing-vessels, $548,292 in foreign steam-vessels, $986,939 in foreign sailing-vessels. The shipping entrances were 66 American vessels of 9,871 tons and 207 foreign vessels of 72,190 tons—total vessels 273, tonnage 82,061; clearances were 31 American vessels of 3,854 tons and 214 foreign vessels of 74,881 tons—total vessels 245, tonnage 78,735. There were 63 vessels of 16,484·33 tons enrolled and licensed at the custom-house, of which 27 of 9,511·86 tons were sailing vessels, and 36 of 6,972·47 tons were steam-vessels.

In 1890–1 the city was divided into 8 wards, and had net public debt of $3,322,000. The valuation of real property was $23,718.07, personal $9,423,310, tax rate $2.90 on $100. There were 60·62 m. of sewers, which had cost $1,038,672, and a system of water-works which had cost $1,056,339. The public-school system had 29 school buildings, valued at $750,000, and a manual-training school, under control of a special board of trustees. There were 8 lines of street railroads and 6 parks: City Park, Court-house Square (7 acres), Metropolitan Park, Riverside Park (46 acres), Schützen Park, and Speranza Park. The libraries were: Toledo Public (in a new building that cost $69,000), Public School, Toledo Law, and St. Patrick's. Among public and charitable institutions were 12 hospitals, reformatories, etc. One of the most noted institutions is the State Lunatic Asylum, the first in the state on the separate cottage system, which now has 34 buildings erected at a cost of $300,000. There were 66 churches—viz.: Meth. Episc. 13; Rom. Cath. 11; Lutheran 10; Bapt. 7; Congl. 5; Presb. 5; Prot. Episc. 5; Jewish 2; and Christian, Christian Science, Disciples of Christ, German Evang. Ref., Salem Evang. Assoc., Seventh-day Bapt., Unitarian, and United Brethren, each 1; besides 16 missions.—In 1891, Sep., there were 6 national banks (cap. of 5 reporting, $1,700,000), 2 savings banks (cap. $270,000), 1 trust company, and 1 private bank. The publications comprised 5 daily, 17 weekly, 2 semi-monthly, and 8 monthly periodicals. Trade and commerce were represented by a chamber of commerce, produce exchange, and merchants' and manufacturers' exchange. The industries include the largest wagon-works in the world, planing and molding mills, sash and blind factories, bridge and boat-building establishments, carriage factories, and manufactories of car-wheels, cabinet-work, bent wood, steam-engines, boilers, iron-work, beer, high wines, and agricultural implements. T. receives large quantities of iron ore, lumber, shingles, and grain; and its grain elevators have aggregate capacity of more than 5,000,000 bushels, while a single one can store 1,500,000 bushels at one time. Its manufacturing interests have been greatly stimulated within a few years by the discovery and development of petroleum and natural gas veins in the n.w.

part of the state.—T. was formed by the union of the villages of Fort Lawrence and Vistula under a city charter 1836.—Pop. (1880) 50,137; (1890) 82,652.

TOLEDO, *tō-lē'dō*, Sp. *tō-lā'thō:* famous city of Spain, cap. of the province of T., and long the cap. of Spain; on the n. bank of the Tagus, by which it is encompassed on three sides; 55 m. s.s.w. of Madrid by railway; on a number of hills, about 2,400 ft. above sea-level. The climate, excessively hot in summer, is bitterly cold in winter. The Tagus is the great fortress of the town. Rushing round it, on the e., s., and w., between high and rocky banks, it leaves only one approach on the land-side, which is defended by an inner and an outer wall, the former built by the Gothic king Wamba in the 7th c., the latter by Alfonso VI. 1109—both remarkable for the number and beauty of their towers and gates. Seen from a distance, the city has an imposing appearance; within, it is gloomy, silent, inert; and its narrow streets are irregular, ill paved and steep. In the midst rises the lofty, massive cathedral, surrounded by numerous churches and convents, mostly deserted, for here the churches are without congregations, and the streets and walks are almost without people. The cathedral, completed 1492, on the site of a former mosque, is a large edifice in simple, pointed Gothic. It was plundered 1521 and 1808, but previously its interior was most magnificent. The stained glass that remains is superb; the choir is a museum of high-class sculpture; and there are two pulpits of metal, gilt, whose workmanship is as fine as that of the richest plate. The cathedral is 404 ft. long, 204 ft. wide; and is divided by 84 pillars into 5 naves. Connected with the cathedral are an extraordinary number of chapels, of great interest, alike from their architectural beauty, their decorations, and their historical associations. The Zocodover, 'square market,' thoroughly Moorish in its architecture, is a fashionable promenade, and was for years the site on which heretics were burned and bull-fights took place. The *Fabrica de Armas*, or manufactory of Toledan swords, a huge, rectangular, unsightly building on the right bank of the Tagus, was erected 1788, though long before that time the Toledan blades had become famous; and the fondness of the Iberians for their weapons, as well as the weapons themselves, was the theme of Livy and Polybius. The temper of the best Toledan blades is such 'that they are sometimes packed up in boxes, curled up like the mainspring of a watch.' The buildings of the town include a theol. seminary, milit. school, female college, hospitals, and manufactories of coarse woolens, paper, guitar-strings, and leather.

T., the *Toletum* of the Romans, was of very early origin and was taken by Marius Fulvius B.C. 193. It was cap. of the Goths during their dominion; 714–1085 it was in the possession of the Moors, and then was permanently annexed to the crown of Castile. In its highest prosperity it is said to have had 200,000 inhabitants.—Pop. (1887) 20,837.

TOLENTINO, *tō-lĕn-tē'nō* (*Tolentinum*): city of central Italy, province of Macerata; 11 m. s. of Macerata, on the left bank of the Chienti. It has a fine cathedral dedicated to St. Nicholas, and a town-hall with ancient inscriptions, a statue of Agrippina, and several good paintings. T. has been a bishop's see from the 5th c. In the Parisani Palace at T., Pius VI. signed a treaty with Bonaparte, in 1797, by which the pope ceded Bologna, Ferrara, and the Romagna to the Cisalpine Republic. Here Murat was defeated by the Austrians (1815).—Pop. 5,000.

TOLERABLE, a. *tŏl'ėr-ȧ-bl* [F. *tolérable*—from L. *toler-ab'ĭlĭs*, that may be endured—from *tolĕrō*, I bear, I endure]: that may be borne or endured; supportable; moderately good or agreeable; not very excellent or pleasing; passable. **Tol'erably**, ad. *-blĭ*, in a manner that may be endured; passably. **Tol'erableness**, n. *-bl-nĕs*, the state of being tolerable. **Tol'erant**, a. *-ănt* [F. *tolérant*—from L. *tolĕrans* or *tolĕran'tem*, tolerating]: enduring; suffering to be, or to be done; indulgent. **Tol'erantly**, ad. *-lĭ*. **Tol'erance**, n. *-ăns* [F.—L.]: patience and indulgence toward those whose opinions or practices differ from our own: in *minting*, the amount of deviation in fineness and weight permitted by law in gold and silver coins; permissible departure from the standard fineness and weight of coins (see Mint). **Tol'erate**, v. *-āt* [L. *tolĕrātus*, tolerated]: to suffer to be; to permit or allow without positive hindrance. **Tol'erating**, imp. **Tol'erated**, pp. suffered; not prohibited. **Tol'era'tion**, n. *-ā'shŭn*, the allowance of that which is not wholly approved; the permission of religious opinions and modes of worship different from those of the established church. **Toleration Act**, an act of the parliament of England, passed 1689, May 24, relieving dissenters, except Rom. Catholics and Unitarians, from certain penalties; complete toleration was granted by act, 1829, Apr. 13.

TOLERANT, TOLERATE: see under Tolerable.

TOLERA'TION, **Religious**: measure of liberty which, in some countries where a particular form of religion is established by law, is allowed to nonconformists publicly to teach and defend their theological and ecclesiastical opinions, and to worship whom and as they please, or not at all: however, no permission is given to violate the rights of others, or to infringe laws designed for protection of decency, morality, and good order, or for the security of the governing power, inasmuch as the enforcement of those laws which have merely civil and political objects in view is indispensable to the public welfare, and must proceed without regard to any citizen's notions of religious duty. In Britain, and by colonial inheritance of English law in some of the states of the American Union, there still remain some statutes imposing penalties on opinions and practices generally regarded as impious and classed as crimes because of their offensiveness to God (see Blasphemy: Brawling in Churches): but these laws are now seldom executed—the opinion having become prevalent, that, except when the religious feelings of the Christian public are so wantonly outraged as to make the perpetrator a nuisance, wrong practice in religion is best overcome by personal moral influence, and that when those accused of Heresy (q.v.) are men of piety and sincere conviction, any degree of severity short of extirpation tends rather to further than to suppress their tenets. Besides, the right of private judgment in matters of faith and worship is now more generally recognized *in practice* than formerly, though even yet multitudes resent the exercise, by their neighbors who differ from them, of the freedom which they claim for themselves—forgetting the principle applied by the apostle Paul to the case of religious differences (Rom. xiv.). The right of private judgment is a lesson that has been slowly learned. The Reformers, who on no other ground could justify their separation from the church of Rome, became in their turn the persecutors, not only of the Romanists, who had persecuted them, but also of such fellow-Protestants as had drawn from Scripture conclusions differing from their own. See Calvin: Servetus: Socinus: Biddle: Jews. In a church claiming Infallibility (q.v.), and believing that salvation is unattainable beyond her pale, it is not only consistent, but to her most earnest members must seem a duty, to prevent by force the spread of what is accounted a fatal heresy; and, in fact, toleration has not been professed or practiced by the Church of Rome. See Albigenses: Waldenses: Dominicans: Inquisition: Huguenots: Bartholomew's (St.) Day: Nantes, Edict of: Cevennes: Dragonnades. But even the Puritans (q.v.), —at least the Presbyterian section of them—though long oppressed themselves, were so blind to the right of others to differ from them, that in their own brief day of power they repudiated by word and deed, as a monstrous and impious error, the principle which Oliver Cromwell (q.v.), far in advance of his times, earnestly advocated, of a universal toleration in religion. In the Assembly of Divines (q.v.) at Westminster 1643-46, the Presbyterian members contended successfully against the proposal of the Independents that all sects should alike be tolerated. 'We hope,' wrote Baillie to his Presbyterian friends in Scotland, 'that God will assist us to remonstrate the wickedness of such a toleration. . . . For this point, both they and we contend *tanquam pro aris et focis*' (Baillie's *Letters*, II. 328, 350; Bannatyne Club ed.: see also the strong expressions of George Gillespie, another member of the assembly, in his *Propositions concerning the Ministry and Government of the Church*, prop. 41 and 42). We accordingly find in the 23d chapter of the *Westminster Confession* an assertion of the duty of the magistrate to promote the true religion, and to restrain and punish heterodoxy—a principle which, soon after the Restoration, was found to work very inconveniently for the Presbyterians themselves, the magistrate being then one who differed from them as to what the true religion was. The Independents of that day, on the other hand, trusting less to ecclesiastical safeguards and more to spiritual forces, set a pattern of religious tolerance which some who claimed to be of their party on this side the Atlantic deemed it unsafe to follow, and which almost the whole Christian world for a century thereafter strongly contemned. Those of the Independents who took refuge in Holland doubtless found their principles of toleration strengthened in that nursery of political liberty in modern Europe. See PILGRIM FATHERS, THE. In the 16th c., Zuinglius and the Hungarian reformer Dudith, disclaimed, by word and action alike, the notion that any Christian man is entitled to assume that the right of private judgment in interpretation of Scripture pertains only to him and his party, and is to be denied to Christians who differ from him. It is chiefly to the many keen discussions in Holland and England in the century which followed the Restoration (aided, no doubt, by that moderation or indifference which characterized the Prot. churches a hundred years ago—by the increasing number and power of the dissenters in England —and by that wider mental culture which enables men not only to see that diversity of mental gifts and acquirements naturally leads to diversity of opinion, but, in Cromwell's language, to 'think it possible that they may be mistaken'), that we must ascribe the tolerant spirit actuating most of the statesmen of England and the United States in the 19th c., and which has recently increased rapidly among the people at large. One indication of this progress is the fact that the term Toleration is not accepted in this country as expressing the attitude proper for the government toward religious systems or organizations. To *tolerate* is to endure, permit, or allow; and the sensitiveness of liberty has become too keen to accept as a permission from any human authority of that which is a natural indefeasible right.

Not only is the *right* of free thought and discussion now generally recognized, but its *necessity* to the well-being of mankind is asserted by eminent thinkers. John Stuart

Mill, in his able treatise *On Liberty*, thus sums up the grounds on which the necessity of such freedom is affirmed by him: '(1) If any opinion is compelled to silence, that opinion may, for aught we can certainly know, be true. To deny this, is to assume our own infallibility. (2) Though the silenced opinion be an error, it may, and very commonly does, contain a portion of truth; and since the general or prevailing opinion on any subject is rarely or never the whole truth, it is only by the collision of adverse opinions that the remainder of the truth has any chance of being supplied. (3) Even if the received opinion be not only true, but the whole truth—unless it is suffered to be, and actually is, vigorously and earnestly contested, it will, by most of those who receive it, be held in the manner of a prejudice, with little comprehension or feeling of its rational grounds. And not only this, but (4) the meaning of the doctrine itself will be in danger of being lost, or enfeebled, and deprived of its vital effect on the character and conduct: the dogma becoming a mere formal profession, inefficacious for good, but cumbering the ground, and preventing the growth of any real and heart-felt conviction, from reason or personal experience' (p. 95).

See Jeremy Taylor's *Liberty of Prophesying;* Milton's *Areopagitica*, his *Treatise of Civil Power in Ecclesiastical Causes*, and his treatise *Of True Religion, Heresy, Schism, Toleration, etc.;* Dr. John Owen's *Indulgence and Toleration Considered;* Barclay's *Apology for the Quakers*, prop. 14; Locke's *Letters concerning Toleration*, and treatise *On the Conduct of the Understanding;* Bishop Hoadley's *Sermons*, and *Dedication to Pope Clement XI.;* Ibbot's *Boyle Lectures on the Right, Duty, Benefits, and Advantages of Private Judgment;* Paley's *Moral Philosophy*, bk. 6, chap. 10; Sydney Smith's *Letter to the Electors on the Catholic Question;* Disraeli's *Curiosities of Literature*, article 'Toleration;' Hallam's *Literature of Europe* (Part III., chap. 2); Whately's *Essays on the Errors of Romanism, etc.;* J. Blanco White *On Heresy and Orthodoxy;* Brook's *History of Religious Liberty;* James Martineau's *Rationale of Religious Enquiry;* Samuel Bailey's *Essay on the Formation of Opinions*, and *On the Pursuit of Truth;* Tayler's *Retrospect of the Religious Life of England;* Edgar Taylor's *Book of Rights, or Constitutional Rights and Parliamentary Proceedings affecting Civil and Religious Liberty in England from Magna Charta to the Present Time.*—As to the manner in which the early Christians became liable to punishment under the Roman laws, see Neander's *History of the Christian Religion and Church*, I., p. 118, Bohn's ed.; Gibbon's *Decline and Fall of the Roman Empire*, chap. 16, compared with chap. 2; Dr. Taylor's *Elements of Civil Law*, App.: also, in the present work, **ANTONINUS, MARCUS AURELIUS: DECIUS: PERSECUTIONS.**

TOLL, v. *tŏl* [Icel. *tall*, deceitful: W. *twyll*, deceit, illusion: Bret. *touella*, to enchant, to allure: OHG. *tollon*, to stroke: originally meant, 'to incite one to do a thing, to draw, to entice']: to stroke or ring slowly, as a bell to invite the people into church; to sound a bell with slow uniform strokes (especially by striking with a hammer or the like and without swinging) in order to announce a death, or to give solemnity to a funeral; in *OE.*, to draw by degrees; to entice: N. the slow repeated sounding of a bell at short intervals. **Toll'ing**, imp.: **Adj.** sounding as a tolled bell: N. the act of one who or that which tolls. **Tolled**, pp. *tōld:* **Adj.** rung, as a bell.

TOLL, v. *tŏl* [L. *tollo*, I take away]: in *law*, to take away; to vacate; to annul.

TOLL, n. *tŏl* [Dut. *tol;* Dan. *told;* Ger. *zoll;* Icel. *tollr*, custom, toll: Gr. *telōniŏn*, a custom-house—from *telos*, a tax, toll]: duty or tax imposed on travellers or goods passing along a bridge or a public road or the like; tax paid, or duty imposed, for some liberty or privilege, as for permission to erect a stall in a market; payment for passage; a miller's compensation for grinding corn. In general, toll is a payment exacted by express statute, or (in former times) by some prescriptive usage or under a royal grant, e.g., by the owner of a port for goods landed or shipped, by the owner of a market or fair for articles sold, or specifically by those charged with maintenance of roads, streets, bridges, etc., for the passage of persons, goods, or cattle. It is essential in a toll that it be for some reasonable consideration; otherwise, it is void. The first recorded royal commission for a road-toll in England was granted by Edward III. 1346. In modern times the right to take toll is always created by statute, and nothing short of statutory authority will authorize its levy, for it is a species of tax.

Many tolls receive special names, as dues, customs, etc.; and the term toll is now mostly used in connection with turnpike roads (so called from the turnpike, or gate turning on an upright axis or pike, at which the tolls are collected) and bridges. See **Highway**. Turnpike tolls, formerly much in use in the United States, have, in recent years, been in gradual process of abandonment, and a similar reform has been applied in Great Britain. **Toll**, v. in *OE.*, to impose a toll on; to exact, as a tax or tribute; to pay toll. **Toll'able**, a. *-ă-bl*, subject to the payment of toll. **Toll'age**, n. *-āj*, payment of toll; the amount paid. **Toll-bar**, a beam or gate across a road at a toll-house to prevent vehicles passing without paying toll. **Toll-booth**, n. *-bôth*, originally, a booth for the collection of tolls; subsequently a prison—in this sense now spelled **Tol'booth**. **Toll-gate**, a gate where toll is taken. **Toll-gatherer**, one who collects tolls. **Toll-house**, the house where the toll-gatherer resides.—**Syn.** of 'toll, n.': tax; impost; cess; custom; duty; assessment; rate; tribute; charge; levy.

TOLLENS, *tŏl'ĕns*, **Hendrik**: popular Dutch poet: 1780, Sep. 24—1856, Oct. 21; b. Rotterdam. In his 17th year he began to make French literature his favorite study, and translations of French tragedies his chief work. At 19 he published translations from the French poets, *A Nosegay of Fragrant Flowers culled on French Ground.* Three years later appeared his *New Songs and Idyls.* In 1805 appeared his tragedy of *Lucretia;* and 1806 that of the *Hoekschen and Kabeljaauwschen,* or the Contest between the Nobility and the Towns in Holland, in the olden time—both original pieces. Of his series of songs and poems were: 'William I.,' the 'Victory at Nieuwpoort,' the 'Four Days' Naval Fight,' the 'Cry to Arms in 1815,' the 'Wintering of the Dutch in Nova Zembla,' and the 'National Song of the Netherlands.' His patriotism and deep warm feeling are shown in 'The Evening Prayer' and 'The General Prayer-day.' T. published also *Romances, Ballads, and Legends* (1818); *New Poems* (1821–29); *Songs of Claudius* (1832); *Poetical Flowers gathered from Neighboring Nations* (1839); *Scattered Poems* (1840); two vols. (1850). T. ranks among the first of modern Dutch poets. His poems touched the heart of the people. The 'Wintering in Nova Zembla' is a wonderful piece of descriptive poetry. In early life, T. belonged to the Rom. Cath. Church, and 1827 joined the Prot. Remonstrants.

TOLMEN, n. *tŏl'mĕn* or *tōl'mĕn* [Celt. *dol,* a table; *men,* a stone: F. *dolmen*]: a curious, supposed Druidical monument, consisting of a large stone placed horizontally on other upright stones about three or four feet high; also called a *cromlech;* also spelled DOLMEN.

TOLOSA, *tō-lō'sâ:* town in n. Spain, cap. of the province of Guipuscoa, 15 m. s. of the seaport of San Sebastian. It is in a deep valley watered by two streams, and has many old family mansions. There is a royal factory for arms, and in the vicinity are zinc and lead mines.—Pop. about 8,000.

TOLSTOI, *tol'stoy,* Count LYEF (or LEO) NIKOLAIEVITCH: novelist and reformer: b. near Tula, Russia, 1828, Aug. 28. He was educated at his mother's estate and at the Univ. of Kazan. He entered the military service 1851 and served in the Caucasus: there he wrote his first works, *The Cossacks* and *Childhood and Youth.* He was on the staff of Prince Gortshakoff at the outbreak of the Crimean war, 1853; commanded a battery at the siege of Sevastopol; and resigned his commission at the return of peace: he details the harrowing incidents of that siege, as observed by himself, in *Sevastopol in Dec., May, and August.* His next work, *War and Peace,* is perhaps the most realistic presentation of the horrors of war found in any literature. In *Anna Karenina* he first gives expression to his discontent with the moral and social conditions in high Russian society. That work was written 1876–7; and to emphasize his condemnation of the existing order of things in Russia, T. renounced the privileges of his status as a nobleman, donned the garb of the *moujik,* and applied himself to learn the trade of a shoemaker, so that he might live on the fruit of his own honest work. His views of the Christian religion found expression in the two works *My Religion* and *Christ's Christianity,* and in many smaller tractates. He goes back, as he thinks, to the original spirit of Christianity, and interprets literally the words of Jesus—his promises, his counsels, his commandments—and not in a figurative sense. Thus, like the Friends, he insists on the absolute necessity of non-resistance to evil and wrong. According to T., love of the neighbor is the fulfilling of the whole law of Jesus: creeds are of no account, prayer of no efficacy, the immortality of the soul an open question. Except as to the authority of creeds, it is not evident by what mental process T. reconciles these tenets with the precepts and promises of the Lord Jesus. He acknowledges no authority in any church organization; and in matters of state, he is an anarchist. His hope of betterment for mankind rests on socialism or communism: and herein he believes that he is but following his master, Jesus. His undeniable sincerity, with his vigor of presentation, has at least commanded public attention to some points in Christ's life and teachings commonly overlooked by Christians. Of T.'s works, which are very numerous, many have been translated into French—and of these nearly all into English. Thus there are English versions of *War and Peace; Anna Karenina; A Russian Proprietor; The Long Exile; Sevastopol; Ivan the Fool; Kreutzer Sonata;* etc. T. despises the fame of literature: with him writing is in the strictest sense a means, not at all an end. The 'one thing necessary' is, not culture, not science, not grace of manner, not art, but love of the brotherhood. He publicly announced, 1891, that whatever he has written is common property of all the world, and may be freely translated and published by every one. In the great famine which came upon Russia in the winter 1891–2, T. and every member of his large family busied themselves with organizing relief for the destitute, invoking assistance from their own countrymen and the world, and with their own hands distributing provisions to the destitute.

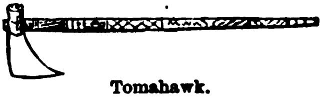
TOLTECS, *tŏl'tĕks:* cultured race which, coming from the north (according to tradition), was dominant in Mexico from presumably the 7th to the 11th c. To the T. are ascribed the ruined ancient 'cities' and great pyramids of Mexico and Yucatan. These remains prove the T. to have well advanced in architecture and sculpture. Proofs are extant of their proficiency also in the potter's art and in weaving. The numerous hieroglyphic inscriptions on their monuments still remain undeciphered. See John L Stephens's *Central America, Chiapas, and Yucatan* (2 vols.), and his *Yucatan* (2 vols.); Charnay's *Anc. Cities of the New World;* Nadaillac's *Prehistoric America;* J. D. Baldwin's *Anc. America.*—See MEXICO.

TOLU-BALSAM, n. *tō-lô'-* [from *Tolu*, on the n.w. coast of New Granada]: a fragrant oleo-resin, the produce of a South-American tree—the *Myrosper'mum toluĭf'ĕrum*, ord. *Leguminōsæ*, sub-ord. *Papilionāceæ* (see BALSAM). TOLUENE, n. *tŏl'ū-ēn*, or TOLUOL, n. *tŏl'ū-ŏl*, a substance allied to benzine, occurring in tolu-balsam, and obtained also from light coal-tar oil.

TOLUCA, *tō-lō′kâ*, or **TOLOC′CAN**: town of Mexico, cap of the state of Mexico; 20 m. s.w. of the city of Mexico: about 8,800 ft. above sea-level; near the volcano of T. It is handsomely built; with fine arcades lining the streets. The plain on which it stands is fruitful in maize and other products. Pop. 12,000. Near the town is the volcano of the same name.

TOM, n. *tŏm* [probably familiar corruption of *Thomas*]: a male cat; a common prefix of male names, as *tom*cat, *tom*fool.

TOMAHAWK, n. *tŏm′ȧ-hawk* [Ind. *tomehagen*, *tamoihecan*, a war-hatchet]: the war-hatchet of the n. Amer. Indians, consisting of a head of horn, or stone, and after the advent of European traders, of iron, fastened to a handle by animal sinews or cords of skin. These hatchets are used in the chase and in battle, not only in close combat, but by being thrown with wonderful skill, so as always to strike the object aimed at with the edge of the instrument. The handles are curiously ornamented. In the figurative language of the Indians, to make peace, is to bury the tomahawk; to make war, is to dig it up. **TOMAHAWK**, v. to kill with the Indian hatchet. **TOM′AHAWKING**, imp. **TOM′AHAWKED**, pp. *-hawkt*.



Tomahawk.

TOMATO, n. *tō-mā′tō* or *tō-mâ′-* [Sp., F. *tomate:* of Indian origin], (*Lycopersicum esculentum*): plant and its fruit, of nat. order *Solanaceæ*. The plant (formerly called love-apple), is grown for its fruit, which has a rounded, flattened, often irregular form and bright red or yellow color, and is eaten either raw or cooked, also in sauces and pickles. The fruit is extensively canned. The T. is a native of S. America, but is grown in nearly all the temperate and tropical regions of the world. In 1596 it was introduced into England as an ornamental and medicinal plant. It was little used in the United States previous to 1840, but is now largely grown near great cities in gardens, and in some sections is a prominent farm-crop. For an early crop, seed should be sown in a hot-bed sufficiently early to have the plants of the right size to set as soon as the ground becomes dry and warm in spring and danger of frost is passed—the time varying with the latitude in which the crop is to be grown. Near large cities, plants are grown sometimes from cuttings, placed in a greenhouse, and forced so as to produce a crop in the winter. The main crop is grown in open land. A soil of ordinary fertility is preferable, but manure in moderate quantity should be used in the hill. Plants should be set in rows 3 to 4 ft. apart each way, according to the habit of growth of the varieties, and frequent cultivation and hoeing should be given. In gardens the plants, which grow 2 to 4 ft. high, are sometimes tied to stakes. This is an advantage in ripening the fruit, but is too expensive for field-crops. The principal enemies of the crop are the stalk-borer, which attacks the vines, and the green worm, which feeds on the leaves. These vermin should be promptly destroyed. The leading diseases are a form of blight affecting the vines, and the rot which sometimes destroys large quantities of fruit. As a preventive the crop should not be grown for two years in succession on the same land. In field-cultivation about 400 bushels per acre is a fair crop. The seed of 87 varieties was offered for sale 1890 by dealers in the United States. These kinds vary greatly in the color, form, and size of fruit, in their foliage, and in the time of ripening. The canning industry has reached large proportions. Reports for 1890 give the number of cases packed as 3,166,177. A very large proportion of the fruit thus packed was grown in Md., N. J., and Delaware.

TOMB, n. *tôm* [F. *tombe*, a tomb—from mid. L. *tumba*, a tomb—from Gr. *tumbos*, a mound of earth raised over a dead body, a tomb: It *tomba;* Sp. *tumba*, a tomb]: a grave; a house or vault in which to deposit the dead; a sepulchre; a monument erected over a grave to preserve the memory of the dead buried there (see below). **TOMBED**, a. *tômd*, deposited in a tomb. **TOMB'LESS**, a. *-lĕs*, without a grave or a sepulchral monument. **TOMB'STONE**, n. a stone with an inscription placed over a grave in memory of the deceased.—A *Tomb* is a receptacle for the dead—an excavation in rock or earth, or a vault or chamber either under ground or partly or entirely above ground, to contain the body. It is frequently in the form of a monument over a grave. In early ages, and among eastern nations, it was sometimes the practice to place the remains of the dead in excavated sepulchres, whose interior was often decorated with painting or otherwise. Where the usage was to burn the dead, their bones and ashes were placed in urns in these receptacles. Some of the most remarkable rock-tombs were those of Egypt, belonging to the 18th and following dynasty of the Theban kings. The monarch's burial-place began to be excavated as soon as he ascended the throne, and the excavation went on year by year, the painting and decoration progressing till the king's death, when it was suddenly broken off, the tomb thus becoming an index both of the king's magnificence and of the length of his reign. The most costly articles are often found in these sepulchres. The decoration was mostly reserved for their interiors, the façades being comparatively unobtrusive. On the other hand, the rock-tombs of Persia and Lycia, less rich and elaborate internally, have imposing architectural façades, those of the Persian kings being copied from their palaces; and during the Roman period, this species of magnificence prevailed at Petra (q.v.) to an extent that gives that now deserted valley the aspect of a city of the dead: see also ETRURIA.

Tombs, in more modern times, have generally been mounds or masses of building over the remains of the dead. In the Homeric poems, heaps or cairns of stones are placed as honorary memorials above the graves of departed heroes. The Sepulchral Mound (q.v.) or tumulus of rude ages is found over the greater part of n. Europe, and is probably older than the subterranean tomb. The Pyramids (q.v.) were the sepulchres of the Egyptian monarchs from the 4th to the 12th dynasty. The tombs of Greece, and still more those of the Greek colonies in Asia Minor, were sometimes pillars, or upright stone tablets, sometimes small buildings in the form of temples: the most celebrated was the *Mausoleum* (q.v.). The Roman tombs were frequently important architectural structures, varying in form, but oftenest consisting of a circular tower resting on a square basement; familiar examples being the tomb of Cæcilia Metella; and the larger and more solid tomb of Hadrian, on the banks of the Tiber, best known as the Castel St. Angelo, about 220 ft. in height, and of immense solidity. In Rome, Latium, and Magna Græcia, tombs were generally outside the towns, and along the principal roads leading into the country, as in the Via Appia at Rome, and the Street of Tombs at Pompeii. A form of excavated tomb, without external architecture, called *Columbarium* (q.v.), also was in use in Rome, whose walls were pierced with cells to receive cinerary urns. The prevalent circular tomb became in the later Roman empire polygonal; and the central chamber, at first small, was gradually increased, till, in the age of Constantine, it became a miniature representation of the Pantheon, generally with a crypt below the principal apartment.

In the earlier centuries of Christianity the burial of the dead in churches was prohibited. The custom first arose of erecting churches over the graves of martyrs; then followed the permission to kings and emperors to be buried in the church porch. The most important tombs of the middle ages are generally within churches or cloisters. There is much variety in form and enrichment of mediæval tombs. The earlier examples consist of a simple stone coffin or sarcophagus, often with a low gabled lid and a sculptured cross. An altar-tomb, or tomb in the form of a table, followed; and in the 13th c., a species of tomb was introduced, consisting of a sarcophagus, on which rests a recumbent figure of the deceased, the whole surmounted by a canopy often of exquisite symmetry and richness. In the renaissance period of art, the tombs became more and more complex. The sarcophagus was disguised, or made the least important part of the monument; the representation of the deceased was confined to a medallion likeness, and the most prominent part of the tomb was of sculptured upholstery, and groups of symbolical and eventually mythological figures. In some of the 16th c. examples, e.g., Michelangelo's tombs of Giuliano and Lorenzo de' Medici, at Florence, the inappropriateness of the design is partly redeemed by the beauty of the figures; but in the succeeding centuries, the vicious taste of these monuments rapidly increased, till it culminated in some of the hideous tombs that disfigure Westminster Abbey and St. Paul's.

TOMBAC, n. *tŏm'băk* [Mal. *tumbaga*, copper]: alloy of copper and zinc; brass with an excess of zinc. **WHITE TOMBAC**, or **WHITE COPPER**, alloy of about 75 parts of copper and 25 parts of arsenic, forming a very beautiful metal used in the manufacture of buttons.

TOMBIGBEE, *tŏm-bĭg'bē*, **RIVER**: affluent of the Mobile river, in Ala.; rising in Tishomingo co., Miss., a little w. of the interstate line, and flowing generally s.e. through four cos. of Miss., entering Pickens co., Ala., at lat. 33° 15', and joining the Alabama about 45 m. above the head of Mobile Bay; length about 450 m. It is navigable as far as Aberdeen, Miss.

TOMBOLA, *tŏm'bō-la* [F.—from It. *tombola*, a kind of lottery]: kind of lottery; a party or 'fair' at which fancy articles are offered as prizes, each purchaser of a ticket being entitled to a prize if he draws all the numbers on that ticket.

TOMBOOC'TO: see **TIMBUKTU**.

TOMBOY, n. *tŏm'boy* [*Tom*, and *boy*]: a rude or wild, romping girl; a hoiden; in *OE*., a harlot.

TOMBSTONE, *tŏm'stōn*: city, cap. of Cochise co., Ariz.; 9 m. n.e. of the San Pedro river, 20 m. n.w. of the Mexican boundary, 25 m. s.e. of Florence. It is on the declivity of low hills which separate it from the river, and in a dry valley that gradually rises to the base of the Dragoon Mountains 12 m. distant n.e. The city contains co. court-house (built 1882), municipal building, hotel, large public hall, several churches and public schools, substantial business blocks, system of water-works 20 m. long that cost $500,000, 1 state bank (cap. $50,000), and 1 daily and 1 weekly newspaper. The low hills in T. contain the richest gold and silver mines in Ariz ; and historical interest is claimed for the region in that it was passed by the surviving members of De Soto's little army on its way to Mexico, was visited by Humboldt, and was the scene of early silver-mining by the Spaniards.—Pop. (1880) 973; (1890) 1,875.

TOMCAT, n. *tŏm'kăt* [from *Tom*, the familiar abbreviation of Thomas, and *cat*]: a full-grown male cat.

TOME, n. *tōm* [F. *tome*, a volume—from L. *tŏmus*, a piece, in mid. L. a book—from Gr. *tomŏs*, a piece cut off, part of a book—from *temnein*, to cut]: a book; one volume of several constituting the same work; generally, any large book.

TOMENTOSE, a. *tō'mĕn-tōs'*, or **TOMENTOUS**, a. *tō-mĕn'tŭs* [L. *tomen'tum*, a stuffing for cushions: F. *tomenteux;* Sp. *tomentoso*]: in *bot.*, covered with hairs so close as scarcely to be discernible; having a whitish down-like wool; nappy. **TOMEN'TUM**, n. *-tŭm*, in *bot.*. the closely matted hair or downy nap covering the leaves or stems of some plants; in *anat.*, minutely divided vessels on the surface of the brain.

TOMFOOL, n. *tŏm'fôl* [*Tom*, the familiar abbreviation of Thomas, and *fool*]: a great fool; a silly trifler. **TOMFOOL'ERY**, n. *-ėr-ĭ*, foolish or senseless trifling; trifles. **TOMFOOL'ISH**, a. *-ĭsh*, nonsensical; idiotic; trifling.

TOMIN, n. *tō'mĭn* [etym. doubt.]: jeweller's weight of 10 grains.

TOMIPAROUS, a. *tō-mĭp'ă-rŭs* [Gr. *tomē*, a cutting: L. *părĭō*, I bring forth]: in *bot.*, producing spores by division.

TOMMY, n. *tŏm'mĭ*: in *Brit. slang*, bread; provisions; specifically, provisions or other goods supplied to a workman from a tommy-shop; truck (see TRUCK-SYSTEM). TOMMY-SHOP, a store owned or controlled by an employer, from which his employés are compelled or expected to draw their supplies of provisions, etc., orders on this store being given them instead of money in payment of their wages. TOMMY MASTER, a master who pays his workmen's wages more or less in goods.

TOM-NODDY, n. *tŏm'nŏd-dĭ*: same as NODDY (q.v.).

TO-MORROW, n. ad. *tŭ-mŏr'rō* [*to*, on, and *morrow*]: the day after the present.

TOM'PION, n.: the iron bottom of a charge of grape-shot; in *lithograph.*, the inking-pad of the lithographic printer. See under TAMP.

TOMPKINS, *tŏmp'kins*, DANIEL D.: vice-pres. United States: 1774, June 21—1825, June 11; b. Scarsdale, N. Y. He graduated at Columbia Coll. 1795, began practice of law 1797; elected to N. Y. constitutional convention and to the state assembly 1801. He was elected to congress 1804, but before taking his seat resigned his office to become a judge of the N. Y. supreme court. He was elected gov. of the state by the democratic wing of the (old) republican party 1807, and was re-elected 1809, 11, 13, and 17 by the united (old) republican party. During his governorship he zealously sustained the policy of Pres. Jefferson, and strongly opposed the establishment in New York of the Bank of N. America. In the war with Great Britain he strengthened with his personal and official credit the financial standing of the U. S. treasury, and advanced money from his own means to purchase war material and to organize troops. In a message to the legislature 1817 he recommended the abolition of slavery in N. Y.; and an act was passed accordingly, which went into effect 1827, July 4. He was elected vice-pres. of the United States 1816, and re-elected 1820—the two terms of Pres. Monroe.

TOMSK, *tŏmsk:* government in w. Siberia, bounded e. and n.e. by the govt. of Enisei or Yeneseisk, n.w. and w. by the govt. of Tobolsk; 331,159 sq. m. T., more than any other govt. in Siberia, abounds in lakes and rivers. Of the rivers, mostly flowing n. from the foot of the Altai Mts., the principal are the Ob, Tom, Chulim, and Irtish. The largest lakes, which are both sweet and brackish, are in the Barabinsky Steppes. The surface is greatly diversified: the Altai Mountains, with summits 10,000 to 11,000 ft. high, with lateral and parallel ranges, give an Alpine character to a great region. Elsewhere are elevated plateaus (3,000 to 4,000 ft.), and extensive lowlands. The climate is mild in the middle and s. districts, but severe in the north. Sandy and clayey soils prevail; but there are patches of good mold on which abundant crops of grain of various kinds, as well as hemp, flax, and tobacco, are raised. The extensive mountain-slopes and plains are covered with luxuriant forests, in which the most common trees are the broad-leafed oak, the cedar, and the pitch-tree. The natural products are numerous. In the s. and e. parts, droves of wild horses and herds of horned cattle are a source of considerable wealth. But the mineral products of the country are its chief source of riches. Manufactures are not extensive; there is a large barter-trade with China, and the commerce of the country is maintained mostly by fairs. Pop. (1889) 1,299,729.

TOMSK: trading-town of Siberia, cap. of the govt. of T., on the Tom, tributary of the Ob, 2,809 m. e. of St. Petersburg, 2,377 m. from Moscow; lat. 56° 30′ n., long. 84° 58′ e. Situated on the great trading highway of Siberia, it is the seat of important transit-trade, chiefly with the Kalmucks and Mongols; but the goods that pass to and from Irkutsk also go by way of this town. There are more than 50 manufactories, chiefly for soap, leather, and distilled liquors, and the most important commercial article is furs. It is said to be the richest town in Siberia; and its commercial importance, its extent, and the number of its handsome buildings, are increasing annually. A great university is being instituted.—Pop. (1888) 36,742.

TOM THUMB: see STRATTON, CHARLES SHERWOOD.

TOMTIT, n. *tŏm-tĭt′* [*Tom*, abbreviation of Thomas, and *tit* (see TIT)]: a very little bird; the blue Tit (q.v.).

TOM-TOM, n. *tŏm′-tŏm′:* see TAM-TAM.

TON, n. *tŭn* [AS. *tunne*, a barrel: mid. L. *tunna*—from L. *tina*, a wine-vessel]: a weight of 20 cwt., equal to 2,240 lbs., called the *long ton* (the hundred-weight being reckoned at 112 lbs., as is customary in the United Kingdom), or equal to 2,000 lbs., called the *short ton* (the cwt. being reckoned at 100 lbs., as is customary in the United States): the *measurement ton* equals 40 cubic ft. TON′NAGE, n. *-nāj*, the carrying capacity of a ship, reckoned in tons of 100 cubic ft. (see TONNAGE, below): a duty or toll on vessels, or on goods carried on water; the shipping of any port or country regarded collectively.

TON, n. *tŏng* [F. *ton*, tone]: the prevailing fashion; high mode.

TON: common termination of place-names; a shortened form of *town*, from Middle English *-toun*, Anglo-Saxon *tun;* as Castle*ton*, Charles*ton*. A *tun* or *ton* was a place surrounded by a hedge, or rudely fortified by a palisade. Originally, it meant only a single homestead or farm, and this use is still common in Scotland. Similarly, the terminations *worth*, *fold*, *garth*, *burgh*, and others also convey the notion of inclosure, protection.—See I. Taylor's *Words and Places*.

TONAWANDA, *tŏn-a-wŏn′da:* village in Erie and Niagara cos., N. Y.; on Niagara river and the Erie canal, and on the Erie and the New York Central and Hudson River railroads; 11 m. n. of Buffalo, 11 m. s.e. of Niagara

Falls. It is the second lumber market in the United States, receiving (1889) 700,000,000 ft., and manufacturing 50,000,000 ft. of round timber; has an excellent harbor with 10 m. of wharves; and is divided into T. and N. T., by Tonawanda creek. The village contains 16 churches, 4 public schools, 3 state banks (cap. $500,000), 1 daily and 2 weekly newspapers, natural and manufactured gas and electric-light plants, Holly system of water-works with 20 m. of pipe, sewerage system with 15 m. flow; also several foundries and flour-mills, iron and steel works, and large beer brewery. The lumber industry has 13 planing, 7 shingle, and 3 saw mills. Pop. (1880) T. 3,864, N. T. 1,492 = 5,356; (1890) T. 7,145, N. T. 4,793 = 11,938.

TONE, n. *tōn* [F. *ton*, tone—from L. *tonus*, a tone—from Gr. *tŏnos*, a stretching, a tone or note of the voice—from *teinō*, I stretch]: sound considered in regard to its pitch, quality, or volume; a musical sound as opposed to *noise;* a particular inflection of the voice as modified by the feelings or passions; the particular sound or accent of the voice in speaking or reading; the state of the body in regard to the healthy performance of its animal functions; state of mind; character; tenor: in *paint.*, the harmony of the colors of a picture in light and shade: in *music*, an interval of sound; one of the larger intervals in the diatonic scale, so called in distinction from the *Semitones* (q.v.), or smaller intervals. Theoretically, some of the intervals called tones are larger than others, and none of them are equal to two semitones: thus, in the scale of C, the intervals CD, FG, and AB all are equal; but DE and GA, also called tones, are smaller; and the semitones, EF and BC, are larger than half even of the larger tones. In instruments, however, which are tuned according to the equal temperament (see TEMPERAMENT), all the tones are made equal, and each equivalent to two semitones. TONE, v. to utter in an affected tone; to tune. TON'ING, imp. TONED, pp. *tōnd:* ADJ. having a tone. TONAL, a. *tōn'ăl*, of or pertaining to tone. TONALITY, n. *tōn-ăl'ĭ-tĭ*, the peculiarity possessed by music in consequence of its being written in definite keys, conforming to certain defined tones and semitones of the diatonic scale. TONE'LESS, a. *-lĕs*, without tone; unmusical. TONE-SYLLABLE, an accented syllable. TONIC, a. *tŏn'ĭk*, increasing tension; giving or increasing strength; imparting vigor to the bodily system; strengthening (see TONICS): pertaining to tones or sounds: in *music*, denoting the key-note: N. a medicine or agent which imparts vigor and strength to the body; a stomachic: in *music*, the key-note or fundamental sound which generates all the rest (see KEY). TONICITY, n. *tōn-ĭs'ĭ-tĭ*, a state of healthy tension of muscular fibres while at rest (see TONICITY, MUSCULAR). TONOMETER, n. *tō-nŏm'ĕ-tĕr* [Gr. *tonos*, stretching, a tone; *metron*, a measure]: delicate apparatus for tuning musical instruments and for ascertaining the exact number of vibrations per second which produce a given tone. TONOM'ETRY, n. *-trĭ*, process of measuring vibrations of tones by means of a tonometer. TONING DOWN, subduing in color or shade; softening so as to remove all harshness.

TONE, *tōn*, THEOBALD WOLFE: Irish patriot; 1763, June 20—1798, June 20; b. Dublin. Having graduated at Trinity Coll., he was called to the bar 1789. He espoused the cause of the Rom. Catholics, and 1791 issued an appeal to Presb. Irishmen for justice to their Rom. Cath. fellow-citizens. The same year he founded the first club of United Irishmen at Belfast, all of whose members were Protestants; similar clubs were organized by him throughout the north. Though himself a Protestant, he was elected sec. and agent of the Rom. Cath. committee 1792. Having become implicated in a revolutionary conspiracy, he was permitted to leave Ireland, and came to the United States 1795, but soon sailed for France to enlist aid from the French directory for an insurrection in Ireland. In France T. held intimate relations with the highest men of the state; was commissioned *chef de brigade*, and was adjt.gen. to Gen. Hoche in the ill-starred expedition to Bantry Bay, 1796. Returning to France, he again accompanied a feeble expedition to Ireland. T. was taken prisoner after heroic resistance, and sentenced to death by court-martial at Dublin 1798; but he cut his throat in prison Nov. 11, the eve of the day set for his execution. His *Life*, written by himself, with a collection of his political writings, was pub. in Washington 1826.

TONGA BAY, *tŏng'ga:* small inlet on the e. coast of Africa, bounded n. by Cape Delgado.

TON'GA ISLANDS AND **TONGATABU**, *tŏng-a-tâ'bô:* see FRIENDLY ISLANDS.

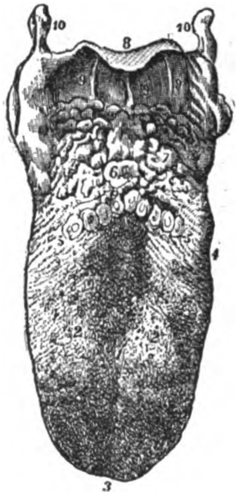
TONG-KING', or TUNG-KING': see TONQUIN: COCHIN CHINA.

TONGRES, *tōngr:* very ancient city of Belgium, province of Limbourg. Its church of Notre Dame dates from 1240, and the cloister from the 10th c. There is a mineral spring in the vicinity, mentioned by Pliny.—Pop. 7,200.

TONGS, n. plu. *tŏngz* [Icel. *tōng;* Dan. *tang;* Dut. *tang;* Ger. *zange*, tongs: Icel. *tangi*, the tang or part of a knife inclosed in the handle]: an instr. of metal, consisting of two long legs jointed at one end, for grasping and holding anything: the three chief forms are: (1) fire-tongs, hinged or pivoted like scissors near the upper end; (2) blacksmiths'-tongs, hinged or pivoted near the lower end; and (3) sugar-tongs, in which the two legs are joined together at the top by a spring.

TONGUE, n. *tŭng* [Icel. and Sw. *tunga;* Dut. *tong;* Ger. *zunge;* Gael. *teanga;* L. *lingua*, a tongue]: the chief instr. of speech, and the organ of taste (see below); speech; discourse; power of speech; voice; a language: anything resembling a tongue in its shape, use, or situation, as the *tongue* of a buckle or balance; a narrow piece of land projecting into the sea; the projection on the end or side of a board which fits into a groove; the clapper of a bell: V. to chide; to scold; to talk or prate much; in *music*, to modify notes with the tongue, as in flute-playing. **Tongu'ing**, imp. *-ĭng*. **Tongued**, pp. *tŭngd:* **Adj.** having a tongue. **Tongue'less**, a. *-lĕs*, speechless; in *OE.*, unnamed; not spoken of. **Tongue-shaped**, a. in the form of a tongue. **Tongue-tied**. a. having an impediment of speech arising from some defect in the tongue; unable to speak freely from whatever cause. **To hold the tongue**, to be silent.

TONGUE, The: symmetrical muscular organ, extending from the hyoid bone backward and downward, to the lips in front, and occupying the buccal cavity. The superior surface, borders, and anterior third of the inferior surface, are free; while the remaining parts are attached to adjacent parts by the investing mucous membrane and subjacent structures. At certain points, this membrane, on leaving the tongue, forms distinct folds, containing fibrous or muscular tissue, which act to a certain extent as ligaments to the tongue. The most considerable of these folds is



The upper surface of the Tongue, showing the Papillæ:
1, the raphe or mesial line; 2, 2, the lateral parts; 3, the tip; 4, 4, the sides or edges; 5, 5, the V-shaped mass of circumvallate papillæ; 6, the foramen cœcum; 7, the mucous glands at the root of the tongue; 8, the epiglottis; 9, 9, 9, the fræna epiglottides; 10, 10, the greater horns of the hyoid bone.—From Sœmmering.

termed the *frænum* (or bridle) of the tongue, and connects its anterior free extremity with the lower jaw. It acts as a strong ligament, and limits the backward movement of the tip of the tongue. In rare cases, this ligament extends abnormally to the tip, so as to interfere with speech and mastication, and the child is said to be *tongue-tied;* recourse must be then had to division of the frænum, popularly known as *cutting the tongue*. Other folds of mucous membrane (the *glosso-epiglottid* folds) pass from the base of the tongue to the epiglottis; while from the sides of the base, passing to the soft palate, are two folds on either side, known as the *pillars of the fauces:* see PALATE. The *superior surface* of the T. is divided into two symmetrical lateral parts by a median longitudinal furrow, beginning at the tip, and extending back about two-thirds of the tongue's length. For the various kinds of papillæ on their surface, see TASTE. At the back of the surface, just behind the circumvallate papillæ, are large mucous glands, extending into long and capacious canals, and helping to secrete the fluid that moistens the T. On the *inferior surface*, the longitudinal furrow, which extends from the tip to the frænum, is deeper than on the upper surface; on each side of it, veins are seen running forward; and immediately beneath the tip is a cluster of mucous glands, known as the glands of Nuck (their discoverer, 1690). The *posterior extremity*, or base, is flattened and extended laterally before it is inserted into the *hyoid bone* (known also as the *lingual* or *tongue bone*), which, with certain ligaments, must be regarded as the basis or framework of the T. The muscles of the T. are usually divided into two groups—viz., the *extrinsic* muscles, which attach the T. to certain fixed points external to it, and move it on them; and the *intrinsic* muscles, which pass from one part of the T. to another, constitute its chief bulk, and move it on itself. These intrinsic muscular fibres run vertically, transversely, and longitudinally, and are so interlaced as mutually to support one another, and to act with the greatest advantage. By action of the various muscles, the upper surface of the T. may be made concave or convex, or may be pressed against the roof of the mouth; the tip may be protruded straight out or laterally, upward and downward, and to any recess (e.g., a hollow tooth) within the mouth where food might lodge; and the whole organ may be drawn back. The organ is freely supplied with blood, mainly by the lingual artery given off by the external carotid. Of the nerves, the glosso-pharyngeal and certain branches of the third division of the fifth nerve are concerned in the special sense of Taste (q.v.); other branches of the fifth nerve are concerned in ordinary sensation, while the hypoglossal nerve on each side is the motor nerve of the tongue.

The various uses or functions of the T. cannot be understood without brief reference to its comparative anatomy. The T. in mammals does not differ materially from that of man; but in general there is close coincidence in size and form between this organ and the lower jaw. In the rodents, the T. has a wedge-like shape. In the giraffe and the ant-eater, the T. is much prolonged, being an important prehensile organ in the former; while in the latter, it is driven into ant-hills, and the victims are secured by its viscid secretion. In the feline races, the conical papillæ are converted into recurved spines of great size and strength, which the animal uses in scraping bones and in combing its fur. Except in mammals, the T. is probably not an organ of taste. For a good description of the T. in birds, reptiles, and fishes, see Prof. Owen's *Anatomy of the Vertebrates*, I., II. Among the Mollusca, the Gasteropoda are provided with a very singular apparatus known as the T., consisting generally of a thin membrane, long and narrow, and rolled, except at its anterior extremity, into a tube. This membrane is covered on its upper surface with transverse rows of minute teeth, or more commonly with plates having tooth-like siliceous projections. These teeth present a great variety of patterns, which are constant in the different genera, and even characterize the species. Two eminent naturalists have independently made the teeth of the Mollusca a basis of classification. The Articulata do not present anything like a true T., though in insects a certain oval appendage is described as a *lingua*.

The functions of the T. are gustation, prehension (in man and monkeys this function is supplied by the hand), mastication, insalivation, deglutition, and speech; to which may be added, spitting and whistling, and in the case of the Gasteropoda, the trituration of the food.

Among *Diseases* of the T. is INFLAMMATION or GLOSSITIS: the most marked characteristics of this affection are great swelling, tenderness, and difficulty in speaking and swallowing. It rarely occurs as an idiopathic or spontaneous affection, but often accompanies severe salivation. It must be treated by purgatives and low diet, and by gargling, as in ordinary Salivation (q.v). Incisions are sometimes useful, both to relieve tension, and by the depletion that ensues. Cases sometimes occur in which the T. suddenly enlarges to immense size, so as almost to cause suffocation, without any true sign of inflammation.

Hypertrophy, or *persistent enlargement* of the T., sometimes results from an imperfectly cured case of inflammation; but is probably in most cases congenital, though perhaps not noticed for a year or two. Bertholin (*Hist. Centur*. III. 85) mentions the case of a male child born with the T. protruding out of the mouth as large as a filbert; and as the child grew, the T. increased to the size of a calf's heart. One of the most common forms of disease of the T. is *ulceration*, which may arise (1) from irritation by a decayed tooth with a sharp jagged edge; or (2) from constitutional syphilis; or (3) from disordered condition of the digestive organs. In the first case, the tooth must be removed; in the second, iodide of potassium with sarsaparilla should be tried; and in the third, the complaint generally yields to regulation of the diet and of the digestive organs, and sedatives at bedtime. *Cancer* of the T. occurs either in the hard or in the epithelial variety.

There is a popular belief that this terrible disease may be excited by the irritation caused by a broken tooth, or by smoking a clay pipe; but on comparing the prodigious numbers of jagged teeth and of clay pipes with the rare cases of cancer of the T., we must reject this hypothesis. All that such sources of irritation can effect is to determine the exact seat of development of cancer in persons predisposed to it. A typical case of epithelial cancer of the T. occurred in the person of Prof. Reid of St. Andrews, eminent physiologist. 1847, Dec., his age being 39, and his health good, he noticed a small ulcer on the right side of the T.; it slowly extended, and acquired hard everted edges, but caused little inconvenience. In 1848, July, it had attained a large size; its surface and edges were ragged, and it caused considerable pain, especially at night. A hard ridge could be felt all round the ulcer, and the glands beneath the jaw became enlarged. The health by the end of Aug. had completely given way from the pain, when the diseased part of the tongue was removed by Sir William Fergusson. In less than a month, the wound had healed, and the health was re-established. In Nov. the enlarged glands were removed; but the disease returned in their scars, and spread till it caused death 1849, July. The only treatment which can be adopted with any chance of success is full and early extirpation. Prof. Syme succeeded in removing the whole organ, without even—strange to say—much affecting the patient's speech or power of deglutition. *Tongue-tie* is an affection for which infants are often brought to the surgeon, and which is often operated on needlessly. The division of the *frænum* with a blunt-pointed pair of scissors, with their point directed downward, is very easily performed, and does no harm to the child. Children who do not speak so soon or so clearly as is expected by their mothers, are often supposed to have tongue-tie.

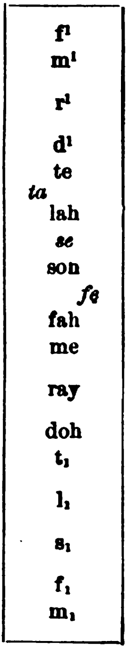
TONGUES, GIFT OF: a peculiar power given to the apostles and other Christians in the first ages of the church. The main passages in the New Test. relating to it are Acts ii. 3-21; I Cor. xii. 10, 28; xiii. 1, and particularly xiv. Allusions to it are in Mark xvi. 17; Acts x. 46; xix. 6. The only allusion to the possession of the gift in later times is in Irenæus, *Adv. Hær.* vi. 6: 'We have many brethren in the church having prophetical gifts, and by the Spirit speaking in all kinds of languages.' From these data, the following conclusions have been drawn by one of the most scholarly and intelligent expositors of the Epistles to the Corinthians. The gift in question is represented as something entirely new in the apostolical age: 'They shall speak with new tongues'—Mark xvi. 17. The effect on the spectators at the day of Pentecost is of universal astonishment. It is represented as a special mark of conversion, immediately preceding or following baptism. It is a gift 'of the Spirit:' 'They began to speak with other tongues, as the Spirit gave them utterance'—Acts ii. 4. It was, moreover, closely connected with the gift of 'prophesying'—I Cor. xii. 10, 28; xiv. 1-6. It appears to be distinguished from prophesying by consisting not of direct warning, exhortation, or prediction; but of thanksgiving, praise, prayer, singing, and other expressions of devotion. It was an utterance of the heart and feelings, rather than of the understanding, so that the actual words and meaning were generally unintelligible to the bystanders, and sometimes to the speakers themselves: 'He that speaketh with a tongue speaketh *not unto men, but unto God;* for no man understandeth; but in the Spirit he speaketh mysteries'—I Cor. xiv. 2, 4, etc. So far, the account of the gift seems intelligible. It was, as Dean Stanley says, 'a trance or ecstasy, which in moments of great religious fervor, especially at the moment of conversion, seized the early believers; and this fervor vented itself in expressions of thanksgiving, in fragments of psalmody or hymnody, and prayer, which to the speaker himself conveyed an irresistible sense of communion with God; and to the bystanders, an impression of some extraordinary manifestation of power, but not necessarily any instruction or teaching, and sometimes even having the appearance of wild excitement, like that of madness or intoxication.' The special difficulty, however, remains, viz., as to the character of intelligibility which, on one prominent occasion, seems to have belonged to the gift. *Glōssa*, or the word translated 'tongue,' does not necessarily imply a distinct language of a people; this is usually expressed in the New Test. by *dialektos*. But in the description in Acts ii. 6, 8, it is expressly said: 'Every man heard them speaking in his *own language*' (*tē idia dialektō*). 'How hear we every man in *our own language*' (the same phrase in the original) 'wherein we were born?' The plain meaning of this account seems to be, that the gift of tongues, on this occasion at least, assumed the form of intelligible communications in foreign languages. But there is no evidence that the apostles then, or at any subsequent time, had the ability, supernaturally imparted, of speaking a variety of languages, with a view to the more adequate discharge of their apostolic functions, as has sometimes been inferred from the passage in the Acts. 'Probably,' it has been said, 'in no age of the world has such a gift been less needed. The chief sphere of the apostles must have been within the Roman empire, and within that sphere, Greek or Latin, especially Greek, must have been everywhere understood. Even on the day of Pentecost, the speech of Peter, by which the first great conversion of a multitude was effected, seems to have been in Greek, which probably all the nations assembled would sufficiently understand; and the speaking of foreign dialects is nowhere alluded to by him as any part of the event which he is vindicating and describing.'—Dean Stanley (*Corinth.* p. 250).

TONIC'ITY, MUSCULAR: state of healthy tension of muscular fibres when at rest. The contractility of muscles shows itself under two distinct forms—*Irritability* and *Tonicity*, which are distinct alike in the mode of their action and in the conditions requisite for their exhibition.

Irritability is most manifest in the voluntary muscles and in the heart, which, when in activity, exhibit powerful contractions alternating with relaxation; while tonicity is shown in a moderate and permanent contraction, which, instead of being consequent on stimulation through the nerves, as in irritability, is especially excited by change of temperature in the tissue itself, and is mainly shown in the involuntary or non-striated muscles. Like irritability, it is an inherent property of muscular tissue during life. 'It manifests itself,' says Dr. Carpenter, 'in the retraction which takes place in the ends of a living muscle when it is divided (as is seen in amputation); this retraction being permanent, and greater than that of a dead muscle. But its effects are much more remarkable in the non-striated form of muscular fibre; and are particularly evident in the contractile coat of the arteries, causing the almost entire obliteration of their tubes, when they are no longer distended with blood.' It is to the moderate action of the tonicity of arteries that their contraction on the current of blood passing through them is due. If the tonicity be excessive, the pulse is hard and wiry; but if it be deficient, the pulse is very compressible, though bounding, and the flow of blood is retarded. *Cold* is the most efficient agent in inducing tonic contraction; while the application of moderate warmth causes relaxation of this contraction: thus, cold and heat are of extreme value as remedial agents, when the tonicity of the blood-vessels is deficient or excessive.

TON'ICS, in Medicine: remedies which, in cases of lack of *tone* or *tonicity* in the muscular fibres, are employed to restore strength and vigor to the system. T., to a certain degree, are stimulants; but while the latter produce rapid but transitory excitement, the former slowly induce a certain degree of excitement, and the effect is permanent. Most T., in which category we must place the shower-bath, cold sea-bathing, open-air exercise, friction, etc., as well as actual medicines of this class, act primarily through the nervous system (iron being, perhaps, the only exception); and secondarily produce their effects on the muscular system at large. It is not only in general muscular debility that T. are to be employed, but in all the numerous disorders which follow in its train, e.g., palpitation, convulsions, epilepsy, chorea, neuralgia, and all forms of periodic disease. Among the chief medicines of this class are the dilute hydrochloric, nitric, nitro-hydrochloric, and phosphoric acids; various salts of bismuth, copper, iron, silver, and zinc; various kinds of cinchona bark, with their alkaloids and their salts, cusparia, calumba, cascarilla, chiretta, gentian, quassia, salix, simaruba, and taraxacum. Although nux vomica and its alkaloid strychnine are placed by writers on Materia Medica among the 'special stimulants,' when given in very small doses they have a well-marked tonic action; and there is probably no tonic medicine of more general utility than the *Syrup of Iron, Quinine, and Strychnine*, a non-officinal but widely-used preparation, of which every dram (the ordinary dose) contains $\frac{1}{32}$ of a grain of strychnine.

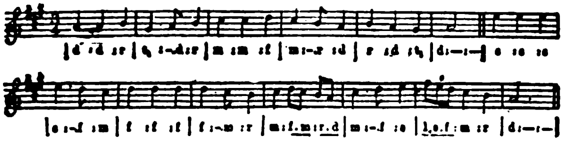
TONIC SOL-FA, *tŏn'ĭk sōl-fâ'*: form of musical notation in which the staff with its lines and spaces is dispensed with. Various attempts have been made to introduce such a system. Jean Jacques Rousseau suggested, but afterward discarded, a notation where the notes of the scale were indicated by the Arabic numerals. A system similar to Rousseau's in its leading features, called the Tonic Sol-fa, has, through the influence of its principal promoter, the Rev. John Curwen (who obtained his main principles from the writings and practice of Miss Glover of Norwich), been brought into use to a considerable extent in singing-schools in Great Britain and the United States. It proceeds on the principle of giving the chief prominence to the fact that there is in reality but one scale in music, which is raised or lowered according to the pitch of the key. The seven notes of the diatonic scale are represented by the Solfeggio (q.v.) syllables, or rather Miss Glover's modification of them—*Doh, Ray, Me, Fah, Soh, Lah, Te; Doh* standing for the keynote in whatever key the music is written. In the early exercises, the pupils are accustomed to a scale or diagram, called the Modulator, representing pictorially the exact intervals of a key, with the semitones in their proper places. In written music, only the initial letters of the solfeggio syllables are used—d, r, m, f, s, l, t; the higher octaves of a given note being distinguished by a ^{1} above, as d^1, r^1; and the lower by a $_1$ or $_2$ below, m_1, m_2. The name of the key is prefixed to a tune as its signature, as 'Key A,' 'Key B flat'—the keynote being, in all the major keys, *doh*. To indicate rhythm, a perpendicular line | precedes the stronger or louder accent, a colon : the softer accent, and where necessary, a shorter perpendicular line | the accent of medium force. Preparatory to writing the notes, the accent-marks are placed at equal distances along the page—thus, | : | : or : | : : | : : | : or | : | : | : | : A note immediately following an accent-mark is supposed to occupy the time from that accent to the next—thus, | d : d : d | d : d : d | d, or | d : r | m : d. A horizontal line indicates the continuance of the previous note through another *aliquot* (the term used by Curwen for the distance of time between any accent and the next)—thus, d : — | d : d. A dot divides an aliquot into equal subdivisions, d : m.r | d. A dot after a mark of continuance indicates that the pre



Modulator.

vious note is to be continued through half that aliquot—thus, | d :-. f | m : d. A comma indicates that the note preceding it fills a quarter of the time from one accent to the next—thus, | d : r.m,f | ; a dot and comma together, three-quarters—thus, | f.,m : r.,d. An inverted comma ‚ is used to denote that the note preceding it fills one-third of the time from one accent to the next—thus, : d | s : l‚s‚f | m : r | d. An aliquot or part of it unfilled, indicates a rest or pause of the voice. A line below two or more notes signifies that they are to be sung to the same syllable. Subjoined is an example of the tonic sol-fa shown alongside of the ordinary notation:

KEY A. **AMERICA.**



In modulating into a new key, the note from which the transition is taken is indicated by a combination of the syllabic name which it has in the old key with that which it has in the new—*me lah*, for example, being conjoined into *m'lah;* and in writing this note, the initial letter of its syllable, as a member of the old key, is placed in small size before and above the initial of the syllable of the new, as ^{m}l, ^{d}s. In the case, however, of an accidental, where the transition is but momentary, a sharpened note changes its syllabic vowel into *e*, and a flattened note into *aw*, spelled *a*, as *fah, fe; soh, se; te, ta*. In the minor mode, *lah* is the key-note; the sharp sixth is called *bah*, and the sharp seventh *se*. The signature of the key of A minor is 'Key C, minor mode.'

For a full explanation of this system, see Curwen's *Grammar of Vocal Music*, or the periodical called the *Sol-fa Reporter*. The advocates of this notation maintain that it possesses advantages over the common system, particularly from the distinctness with which it indicates the key-note and the position of the semitones; the cheapness with which it is printed; and the manner in which, they say, it develops the proper mental effects of notes in key-relationship, and employs them in teaching. It has, however, been objected to by some, for its withdrawal of the direct indication of pitch to the eye which exists in the common notation, for its limited applicability to instrumental music, and for its acquirement not being, like that of the ordinary notation, an introduction to the world of musical literature.

TONIC, TONICITY: see under TONE.

TO-NIGHT, n. ad. *tû-nīt'* [*to*, on, and *night*]: the night at the close of the present day.

TONING, n. *tŏn'ĭng:* the treatment of a positive photographic print with a weak solution of gold, in connection with other modifying chemical salts, by which the whole or a portion of metallic silver is replaced by metallic gold in fine division: the effect is to give permanency to the print, and to subdue and modify the disagreeable color, and substitute various shades of purple, black, blue, brown, and gray.

TONITE, n. *tŏn'īt* [L. *tono,* I thunder]: a powerful explosive agent, prepared from gun-cotton.

TONKA-BEAN, *tŏng'kă-*, or TONQUIN-BEAN, *tŏng'kwĭn-* [F. *tonca*]: the fruit or seed of a shrubby plant of Guiana, possessing a very pleasant smell, used in the scenting of snuff; the plant *Dipterix odorāta,* ord. *Leguminōsæ,* sub-ord. *Papiliŏnācĕæ,* having pinnated leaves and axillary racemes of purplish flowers. The fruit is an oblong, dry, fibrous drupe, containing a single seed, which has a strong agreeable odor, due to the Coumarine (q.v.) which it contains, and which is sometimes found crystallized between the cotyledons. Tonka-beans are used for flavoring snuff, for which purpose one is carried in the snuff-box; and are put among clothes, to preserve them from insects and to communicate an agreeable odor.

TONKIN': see TONQUIN: COCHIN CHINA.

TON'NAGE: capacity of a ship expressed in register tons of 100 cubic ft., the 'register ton' being the unit on which port and other charges are levied. Prior to 1865 the rule followed in the United States in computing the tonnage of vessels was to multiply the extreme length (less one-third the breadth) by the breadth and the depth respectively, and then to divide by 95. In 1865 the British system (with modifications) was adopted. This, which dates from 1835 (though not perfected until 1854 and later), superseded in the United Kingdom a very imperfect system (established 1719) in which the depth was *assumed* to be equal to the breadth, the formula being:

$$\frac{\text{breadth} \times \text{breadth} \times \text{length}}{94} = \text{tonnage.}$$

Traders (desirous to save tonnage dues) naturally built their ships with as little beam as possible, producing deep wooden boxes capable of carrying a maximum of cargo with a minimum of beam, but highly dangerous in stormy weather. In the new system, however, actual measurements of depth are made at certain intervals along what is called the 'tonnage deck' (i.e., the second deck from below in all vessels of more than two decks, and the upper deck in all other vessels), the number of which depends on the total length of the vessel as measured along this deck. With a length of 50 ft., six depth-measurements are made (in the British system only 4); with a length of 50 to 100 ft., eight depth-measurements are made; and so on through the six classes (5 in the Brit. system) into which vessels are divided according to length. At each of these points, 'transverse areas' are computed and set down in ft. and decimals of a ft. These, except the first and last, are then multiplied by certain numbers (4 for the even numbers, counting from the bow, and 2 for the odd), the sum of the products added to the sum of the first and last transverse areas (if any); the total is multiplied by one-third the common distance between areas, and then divided by 100. This represents 'the register tonnage below the tonnage deck.' To obtain the 'gross tonnage,' it is necessary to add the cubic content of all spaces above the tonnage deck, the poop (if any), deck-houses, etc. This is ascertained by multiplying the horizontal area of such spaces by the mean height, and dividing by 100, as before. In steamships it is customary to deduct the cubic content of the engine-room, and the space occupied by the screw-shaft, etc.

Displacement tonnage is found in the same way as register tonnage, except that measurements are made not along and from the tonnage deck, but from the load-water-line, and the final cubic content is divided by 35.

The Brit. system has also been adopted by Denmark, Austria-Hungary, Germany, France, Italy, Spain, Sweden, the Netherlands, Norway, Greece, Russia, Finland, Hayti, Belgium, Japan, etc., generally with slight differences, especially in the rules for deduction of engine-room in steamships; and was adopted in its essentials by the international congress at Constantinople 1873, in connection with fixing the basis for Suez canal charges.

TON'NAGE (properly **Tunnage**) **AND POUNDAGE**: tax of so much per *tun*, formerly levied on all wine imported into England, and of 12 pence per lb. on all merchandise imported or exported; abolished 1787.

TONQUIN, *tŏn-kēn'* (better *Tong-king*:) region in the n.e. of the Indo-Chinese peninsula, bordering on s. China. It is mountainous in the n.; but the greater part of its area is the fertile basin of the important river Song-ka or Songcoi. Formerly an independent state, it has been for more than one hundred years a dependency of Anam (see Cochin China), forming its richest province. The French, moved by the hope of finding access into China by the head-streams of the Song-ka, have repeatedly intervened in the affairs of T.; and 1874 forced the Anamese to recognize their protectorate over T., and open its ports to trade. To enforce this claim, France occupied the delta of the Song-ka 1883, but met with difficulties; China still making opposition, even after a treaty had been signed 1884, recognizing Anam as practically a vassal-state of France. The cap. of T. is Hanoi, Kesho, or Cachao (q.v.).—The *Gulf of T.*, between T. and the island of Hainan, is 300 m. long by 150 m. wide.

TONQUIN-BEAN: see Tonka-bean.

TONSIL, n. *tŏn'sĭl* [L. *tonsil'læ*, the tonsils]: one of two oblong glands situated on each side of the fauces, at the base of the tongue (see Palate). Ton'sillar, a. *-sĭl-lėr*, or Ton'silar, a. *-sĭ-lėr*, pertaining to the tonsils. Ton'silli'tis, n. *-sĭl-lī'tĭs*, inflammation of the tonsils; a form of sore throat (see Quinsy). Ton'sillit'ic, a. *-lĭt'ĭk*, or Ton'silit'ic, a. *-ĭt'ĭk*, related to or connected with the tonsils.

TONSORIAL, a. *tŏn-sō'rĭ-ăl* [L. *tonsorius*, of or belonging to shaving—from *tonsor*, a barber—from *tondērĕ*, to shave]: of or pertaining to a barber or shaving. **Ton'sile**, a. *-sĭl*, that may be clipped or shorn. **Tonsure**, n. *tŏn'shûr* [F. *tonsure*—from L. *tonsūra*, a shearing, a clipping: It. *tonsura*]: act of clipping the hair or of shaving the crown of the head; state of being shorn; in the *Rom. Cath. Chh.*, the first ceremony performed in dedicating a person to the priesthood; the corona or crown on the head of a priest or monk, formed by clipping or shaving the hair, and varying in size according to the order and rank of the person (see below). **Ton'sured**, a. *-shûrd*, shaven on the crown; shorn; bald.

TON'SURE: religious observance in the Rom. Cath. and oriental churches, which consists in shaving or cutting the hair, as a sign of the dedication of the person to the special service of God, and commonly to the public ministry of religion. The usage was not prevalent in the early ages of the church; and seems to have arisen in reference to the monastic rather than the clerical life. Paulinus of Nola, end of the 4th or beginning of the 5th c., alludes to it as then in use among the western monks; and it speedily passed from them to the clergy, the crown-like figure being regarded partly as a symbol of Christ's crown of thorns, partly as an emblem of the 'royal priesthood' of the Christian dispensation. The form of the T. differed in different churches. That of the Roman Church, called 'the T. of Peter,' consisted in shaving the crown as well as the back of the head, so that there remained a circular ring or 'crown' of hair: this was the usage in Italy, Gaul, and Spain. In the 'Scottish (or Irish) Tonsure,' in use in Ireland, in n. Britain, and in those parts of Germany in which the Irish missionaries had preached, the entire front of the head was shaved, leaving the front bare as far back as the line from ear to ear: this T. was called 'the Tonsure of James,' and sometimes of 'Simon the Magician.' The Greeks and other orientals shaved *the entire head*. The supposed derivation of the Irish form of T. from apostolic times led to its being held both in Ireland and in Britain, as well as other churches of Irish foundation, to be of vital importance, insomuch that the introduction of the Roman form was almost the occasion of a schism. Originally the T. was merely a part of the ceremonial of initiation in orders, and performed only in the act of administering the higher order; but about the 7th c. it became an independent ceremonial; and a question has been raised whether it is to be considered as itself an order, and to be added to the list of what are called the 'minor Orders' (q.v.). The now received opinion of Rom. Cath. writers is that T. is not an 'order,' but only a 'preparation for orders.'—See Wetzer and Welte's *Kirchen-lexicon*, art. 'Tonsur.'

TONTINE, n. *tŏn-tĕn'* [F. *tontine:* so called from an Italian, Lorenzo *Tonti*, who originated the scheme in the 17th century]: an annuity of survivorship; an annuity shared equally by several individuals, the equal share being increased by the death of successive annuitants until the whole goes to the last survivor, or to the last two or three, according to the original agreement: see INSURANCE—*Life Insurance.*

TONTY, *tŏn'tĕ*, Chevalier HENRY DE: soldier and explorer: about 1650–1704, Sep.; b. Gaeta, Italy; son of Lorenzo T., inventor of the TONTINE (q.v.) system of annuities. T. was a soldier in early youth, and lost a hand, which was replaced by an iron one. He accompanied LA SALLE (q.v.) to America 1678; built forts on the frontier against the Iroquois; wintered at Green Bay, Mich., 1681; descended the Mississippi with La Salle 1682; returning to Mackinaw for aid to La Salle, he again descended the Mississippi, and found La Salle dead. T. died where Mobile now stands.

TOO, ad. *tô* [AS. *tó*, denoting an increase or addition (see To)]: more than enough; over and above; in addition; likewise; also.

TOOK, v. *tûk:* pt. of TAKE (q.v.).

TOOKE, *tûk*, JOHN HORNE: etymologist and political adventurer: 1736, June 25—1812, Mar. 18; b. London; son of John Horne, a London poulterer, or, as the son when at Eton School chose to express it to his aristocratic companions 'Turkey merchant.' He added to his name (Horne) that of TOOKE, 1782. He was educated at Westminster and Eton; and afterward at St. John's College, Cambridge, where he took the degree B.A. 1758. His strong desire was to study law; but, according to his father's wish, he took orders as an Anglican priest, and 1760 became curate at New Brentford. It was an unfortunate position, and appears to have impaired the honesty of his character. In a letter to John Wilkes (q.v.) he writes: 'It is true I have suffered the infectious hand of a bishop to be waved over me; whose imposition, like the sop given to Judas, is only a signal for the devil to enter; but I hope I have escaped the contagion.' When Wilkes (whose acquaintance Horne had made during a trip to Paris) stood as candidate for the county of Middlesex, T. zealously aided him, pledging his credit for Wilkes's expenses; but he afterward quarrelled with his dubious associate, and 1770–1 the two had a rasping epistolary controversy, to the gratification of their enemies. Horne still, however, continued to meddle in political affairs, and even ventured to encounter (not without success) the formidable Junius. In 1773 he resigned his living at New Brentford, and again turned to the study of law, for which he had a natural fitness. About this time, he rendered to a friend, William Tooke, of Purley in Surrey, important services—by a bold public attack preventing the passing of an act in parliament to Tooke's injury in regard to an estate which included Purley Lodge. In return, Tooke designed to make him his heir, but eventually left him only a legacy of £500. Altogether, however, he is said to have received from this gentleman about £8,000; and, in consequence, adopted (1782) the surname by which he is known. In 1775 he was fined and imprisoned in the king's bench for signing an advertisement accusing the king's troops of barbarously murdering the Americans at Lexington and Concord. While in prison, he penned his celebrated *Letter to Mr. Dunning*, in which are the germs of his *Diversions of Purley*. It excited great attention; and even Dr. Johnson, who detested the writer's political sentiments, expressed his intention—should he publish a new edition of his *Dictionary*—to adopt several of the 'dog's' etymologies. On his release from confinement, T. tried to gain admission to the bar, but was refused, on the ground that his clerical orders were indelible. He reverted to political writing, at once the pleasure and the poison of his life; and in a *Letter on Parliamentary Reform* advocated universal suffrage. In the struggle between Pitt and Fox, he pamphleteered on the side of Pitt; but soon came to hate Pitt too, as he had learned to hate most other public men. In 1786 appeared H.-T.'s famous *Epea Pteroenta, or the Diversions of Purley*, a work on the analysis and etymology of English words, which has given fame to his friend's estate, inasmuch as, amid much that is erroneous in principle and detail, it contains much more that is acute, original, and true. In particular, he has demonstrated, according to a *Quarterly Review* (No. 14), that 'all words, even those that are expressions of the nicest operations of our minds, were originally borrowed from the objects of external perception' (see PHILOLOGY). But his passion for politics soon drew him from the calm pursuit of literature into the vortex of public life. In 1790, and again in 1796, H.-T. stood as candidate for Westminster, and made most able and forcible speeches from the hustings; but was unsuccessful. Meanwhile, 1794, May, he had been arrested for high treason and conveyed to the Tower; and on trial had been instantly acquitted by the jury. At length, 1801, this great enemy of rotten boroughs entered parliament for the most notorious rotten borough in England—Old Sarum; but at the end of one parliament he was excluded by an act which had been passed for the purpose, declaring ineligible for the house of commons all persons in holy orders. He died at Wimbledon. H.-T. was never married, but had several natural children, to whom he left his property. The best ed. of the *Diversions of Purley* is that of Taylor (Lond. 1840).

TOOL, n. *tôl* [Icel. *tól*, tools: AS. *tól*, a tool]: an instr. or aid for any manual operation; a person used by another as an instr. to accomplish certain ends; a hireling; a figure or ornament impressed on cover of a book by means of a stamp or 'tool:' V. to shape or fashion with a tool: in *slang*, to drive, as a coach. **TOOL'ING**, imp.: N. workmanship performed with a tool, as in book-binding. **TOOLED**, pp. *tôld*. **TOOLED-ASHLER** or **-ASHLAR**, n. *tôld-ăsh'lėr*, in *mason.*, ashler with its face chisel-dressed into parallel ridges and hollows.

TOOM, n. *tôm* [Sw. and Dan. *tom;* Icel. *tómr*, empty, unoccupied]: in *Scot.*, a place where rubbish may be emptied or poured out; a dump: ADJ. empty: V. to empty: see TEEM 2.

TOOMBS, *tômbz*, ROBERT: statesman: 1810, July 2—1885, Dec. 15; b. Wilkes co., Ga. He was educated in the Univ. of Virginia and in Union Coll., and was admitted to the bar 1830, while still a minor. He quickly rose to the highest rank in the legal profession of Ga. In the war with the Creeks, 1836, he was capt.; was member of the Ga. legislature 1837–40, and a leader in the whig party. He was a supporter of Gen. William H. Harrison in the presidential canvass of 1840, and of Henry Clay in that of 1844. Elected representative in congress 1844, he was member of the house for 4 successive terms, and 1853–61 was U. S. senator. In the house he powerfully promoted the passage of the Mo. compromise measure: in the senate he was uncompromising in his advocacy of the doctrine of state rights, and insisted on the necessity of maintaining and extending slavery. On the election of Abraham Lincoln, T. made a tour of his state, stirring up the people to revolt. He was member of the first Confederate congress, then was Confederate sec. of state, but resigned to take a brigadiership in the army. After active service in the field, he resigned his commission after the battle of Antietam, and returned to Ga. He went abroad at the close of the war, but returned to Ga. 1867, resuming law practice. As advocate of the state of Ga., he compelled the railroads to submit to the general tax law.

TOOMBUDRA, *tôm-bŭd'râ* (correctly, TUNGA-BHADRO): river, important tributary of the Kistnah or Krishna, rising in s.w. Maisur (Mysore), and after a n.e. course of 350 to 400 m. joining the Kistnah 25 m. below Karnul.

TOON, *tôn*, or TOONA, *tô'na* (*Cedrela Toona*): tree of nat. order *Cedrelaceæ*, one of the largest timber-trees of India. Dr. Hooker mentions one which he measured, 30 ft. in girth at five ft. above the ground. The leaves are pinnate, flowers small, in panicles, with honey-like odor, petals erect and approaching each other so as to form a sort of tube. The tree grows at the height of 4,000 ft. on the Himalaya Mts., and is found to the furthest s. of the E. Indies. It is sometimes called *Bastard Cedar*. The wood is soft, but is used for furniture. The bark is a powerful astringent, and is used in dysentery, diarrhea, etc.

TOONGROO': see DHOORCATEE.

TOORKISTAN', or TURKISTAN': see TURKESTAN.

TOOT, v. *tôt* [O. Dut. *tuyten;* Dan. *tude*, to blow a horn: Icel. *thjóta*, to resound as the wind]: to blow a horn, flute, or other wind-instrument with little short blasts: N. a blast on the horn. TOOT'ING, imp. TOOT'ED, pp. TOOT'ER, n. *-ér*, one who toots or plays on a pipe or horn.

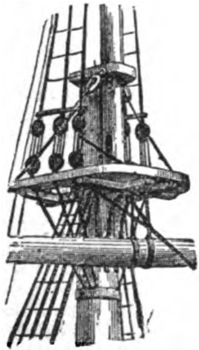
TOOTH, n. *tôth;* **Teeth** (q.v.), n. plu. *tēth* [Goth. *tunthus;* Ger. *zahn;* Dan. and Dut. *tand;* Icel. *tönn*, a tooth]: one of the bony processes growing in the jaws, used as the instrs. of biting and chewing (see **Teeth**); something pointed; a prong; one of the projections on the rim of a wheel by which it catches the prominent parts of another wheel or body; taste; palate: V. to furnish with teeth; to indent; to jag; to lock into each other. **Tooth'ing**, imp.: N. in *building*, the irregular stones or bricks left jutting out at the end of a wall or building to form a union for any additional building. **Toothed**, pp. *tôtht:* **Adj.** having teeth or jags. **Tooth'ful**, n. *-fûl*, a small quantity: **Adj.** in *OE.*, palatable. **Tooth'less**, a. *-lĕs*, without teeth. **Tooth'ache**, n. *-āk*, severe pain in one or more of the Teeth (q.v.). **Tooth'some**, a. *-sŭm*, grateful to the taste. **Tooth'someness**, n. *-nĕs*, the quality of being toothsome. **Tooth'y**, a. *-ĭ*, having teeth. **Teeth on edge**, a disagreeable tingling sensation in the teeth, caused by grating sounds, or by the actual or imaginary contact of certain substances with the teeth, as an acrid or a woolen substance. **Tooth-pick**, or **Tooth-picker**, a small article for picking out particles of food that have lodged between the teeth. **Toothwort**, a parasitic plant, the *Lathræa squamāria*, ord *Orobanchācěæ*. **Tooth and nail**, with one's utmost power; by all possible means. **In the teeth**, in direct opposition. **To the teeth**, directly to one's face. **To cast in the teeth**, to retort reproachfully. **To show the teeth**, to threaten. **In spite of the teeth**, notwithstanding threats expressed; in defiance of opposition.

TOOTH'ACHE-TREE: see **Aralia**: **Xanthoxylum**.

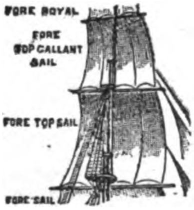
TOOTH'-ORNAMENT: architectural decoration much used in the Early English style.

TOP, n. *tŏp* [Icel. *toppr*, the top or summit: Sw. *topp*, a summit: Low Ger. *topp;* Dut. *top*, summit: Dan. *top*, a tuft, a top: Ger. *zopf*, a tuft, top of a tree]: the highest or uppermost part of anything; the surface; the highest place, person, or rank; the chief; the crown of the head: among *seamen*, small platform at the head of each lower mast. It is supported on the trestle-trees and cross-trees, and serves to give a wider base to the topmast shrouds. It is used also for working the upper sails. In a well-ordered ship there is a captain and crew for each top: **Adj.** situated at the top or highest part: V. to rise to the highest place; to rise above others; to excel; to rise over and above; to cover on the top; to crop; to take off the upper part. **Top'ping**, imp.: **Adj.** fine; gallant; great; predominating. **Topped**, pp. *tŏpt:* **Adj.** surpassed; having the top cut off. **Top'ful**, a. *-fûl*, full to the brim. **Top-armor**, in a *ship*, a railing on the top protected with netting. **Top-boots**, boots with an ornamental band of bright-colored leather on the upper parts; also called **Tops**. **Topcoat**, a coat worn over the ordinary dress by men; an overcoat. **Top-draining**, surface-draining. **Top-dressing**, manure laid on the surface without being turned or plowed in. **Topgallant**, a. highest; elevated; that is above the topmast (see **Topgallantmast**). **Top-heavy**, a. too heavy on the top;

tipsy. **Top-knot**, a knot worn by women on the top of the head: a small fish (*Rhombus hirtus* and *R. punctatus*) of the same genus as the Turbot (q.v.) and Brill (q.v.—see also below). **Topmast**, the second mast above the deck, next the lower mast. **Top'most**, a. *-mōst*, the uppermost; the highest. **Top-proud**, in *OE.*, proud in the highest degree. **Top-sail**, the sail extended across the topmast. **Top-timbers**, pieces in the ribs of a ship's side, which are next above the futtocks. **Top of the tree**, a high or the highest position in anything. **To the top of his bent**, as much as he could desire (see Bent 1).



Ship's Top.



Foremast, showing Top-gallant.

TOP, n. *tŏp* [Dut. *top;* Ger. *topf*, a spinning-top, so called from tapering to a *top* or point (see Top 1)]: a child's toy, of a pear shape, which is made to spin on its point by means of a long string; also with a blunter point made to spin for any length of time by the continual application of a whip of several loose strands.

TOPAZ, n. *tō'păz* [F. *topaze*—from L. *topāzus;* Gr. *topāzŏs*]: one of the precious stones, occurring in finely striated crystals, transparent, of various colors, or colorless, most frequently yellow, and harder than quartz. **Topazolite**, n. *tō-păz'ō-līt* [Gr. *lithos*, a stone]: pale-yellow, nearly transparent, variety of garnet. **Topaz-rock**, granular slaty mixture of quartz, schorl, and topaz.—*Topas* is a mineral, ranked by mineralogists among Gems (q.v.), and whose finer varieties are much valued for their lustre and their beauty of color. It is composed chiefly of alumina and silica, the former, in general, more than 50 per cent. of the whole, with fluoric acid and usually a little oxide of iron. It is found generally in primitive rocks, and in many parts of the world. A crystal 19 ounces in weight was found in the Cairngorm Mountains in Aberdeenshire, Scotland. Fine topazes are found in Ceylon, but those most prized by jewellers are generally from Brazil. The finer varieties are found usually either crystallized or as small rolled masses which may have been formed from crystals, in alluvial soil. T. is colorless, or red, blue, green, or yellow, in great variety of shades. Its crystals are rhombic prisms, generally terminated by four-sided pyramids, but often variously bevelled and acuminated. The prisms are finely striated. The cleavage parallel to the base of the prism is easy. The specific gravity is about 3·5. The lustre is vitreous. T. is translucent or almost transparent on the edges. It is harder than quartz. It is rendered very electric by heat or friction; and by this property a T. may at once be distinguished from a diamond or ruby, for which, otherwise, when cut and set, it might readily be mistaken. A coarse greenish-white variety, called *Pyrophysalite*, occurs near Fahlun, in Sweden, which is not crystallized. When reduced to powder, it can be used as emery for grinding and polishing.—T., though named from the *Topazion* of the ancients, seems to be a totally different mineral.

TOPE, v. *tōp* [Bav. *toppen;* Sp. *topar*, to knock: Sw. *topp;* F. *tôpe*, an exclamation representing striking hands on the conclusion of a bargain]: properly, to strike the glasses together before drinking; to pledge one in drinking; to drink frequently and to excess; to tipple. To'ping, imp. Toped, pp. *tōpt*. Toper, n. *tō'pėr*, a drinker to excess; a tippler.

TOPE, n. *tōp* [Hind.]: a grove or clump of trees.

TOPE, n. *tōp* [a Cornish word]: small species of shark, of the genus *Galeus* (*G. canis*) and family *Galeīdæ*, having two dorsal fins and one anal fin, spout-holes, and the eyes furnished with a nictitating membrane, the first dorsal situated over the space between the pectorals and ventrals. The T. is very abundant on s. coasts of Britain, but rarer toward the north. Other local names are *Miller's Dog* and *Penny Dog*. It attains a length of about six ft. The T. is extremely troublesome to fishermen, robbing their lines of the fish and biting off the hooks; or, if it happens to be itself hooked, often winding the line round its body in many coils and with tangled knots.

TOPE, n. *tōp* [Pali, *thupa;* Skr. *Stupa* (q.v.), a mound, an accumulation]: a Buddhistic monument raised over or intended for the preservation of a relic or relics, called in Ceylon and elsewhere *dagopa* (the origin of our word 'pagoda'). Another designation of such monuments is *chaitya*. *Tope* (literally, 'accumulation') conveys a sense analogous to L. *tumulus*. *Dagopa* is a corruption of *dhâtu-gopa*—i.e., relic-preserver; and *chaitya* is applied generally to objects of worship, as images, temples, sacred trees, etc. *Tope* is therefore the name of those monuments in regard to their shape; *dagopa* in regard to their purpose; and *chaitya* the general term. Though the shape of the T. underwent many changes, it is possible to distinguish its oldest type. The oldest topes are in the shape of cupolas, usually spherical, sometimes elliptical; resting on a cylindrical or quadrangular or polygonal base, which rises either in a straight or inclined line, or in terraces. The top of the cupola, surrounded by a balcony of pillars of a peculiar kind, is crowned by a structure generally quadrangular, but sometimes in the shape of a reversed pyramid of a few steps; and over this structure is a roof in the shape of an extended parasol. This was the form, e.g., of the topes of Sanchi, of the dagopas of Ceylon, and the oldest monuments of this kind in the Punjab and Afghanistan; though in most of them the parasol, being of wood, is either completely destroyed or barely recognizable in its fragmentary condition (see **Buddhism**, where, in the section of the cave-temple at Karli, the T. is seen still surmounted by the wooden umbrella). The cupola was sometimes ornamented with more than one parasol; in some of the topes of Sanchi there are three and even five parasols side by side, the middle one exceeding the rest in height. The different arrangement of these parasols, especially when their number increased, led to a different shape of the T., e.g., as in China and Tibet. This arrangement consists in placing them one *over* the other; and not only three or five, but even seven, nine, or more are so placed. The height of the structure thus became greater, and the topes, instead of having the character of cupolas, now assumed that of pyramids resting on a cupola base, the parasols gradually giving place to a real pyramidal form. In some monuments of this class, however, the cupola was placed above, when the base consists in round or quadrangular towers rising in a spiral form or in several stories. The Chinese, on the contrary, rejected the cupola altogether, and merely retained the succession of parasols extended one over the other, converting them into a many-storied tower (called *ta* by the Chinese, and *pagoda* by foreigners); and the same is the case with the topes of the Mongols, the *Seuvurghans*, which are pyramids erected on a low quadrangular base. In the interior of the T. is the cell or chamber (*dhâtugarbha*) where the box containing the relics and 'the seven precious things' (mostly precious metals and gems) was placed. This cell consists of six slabs of stone, firmly closed after the box with the relics, etc., had been placed in it: and it was immured into the T. after it had been built to a certain height, so that when the T. was completed the cell enshrining the relic

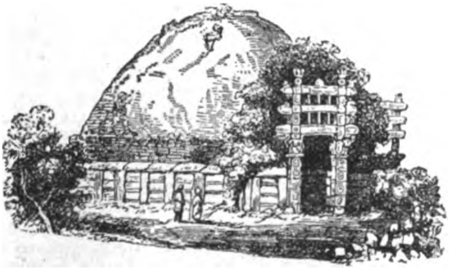


Fig. 1.—View of principal Sanchi Tope.—From Fergusson's *Handbook of Architecture.*

was inclosed on all sides with solid brick-work.—That the cupola of the T. was intended to represent the water-bubble, the Buddhistic symbol of the hollowness and perishability of the world, is indicated by a legend in the *Mahávans'a* (q.v.). As the parasol is the emblem of Hindu royalty, it is conjectured that the parasol of the T. was intended to imply the royal dignity of a Buddhistic saint. When the topes became pyramids or towers consisting of terraces and stories, the number of the stories likewise had a symbolical import: thus, only the topes of the most accomplished Buddhas had 13 terraces; three terraces imply the three worlds; five, the five steps of Mount Meru; etc.

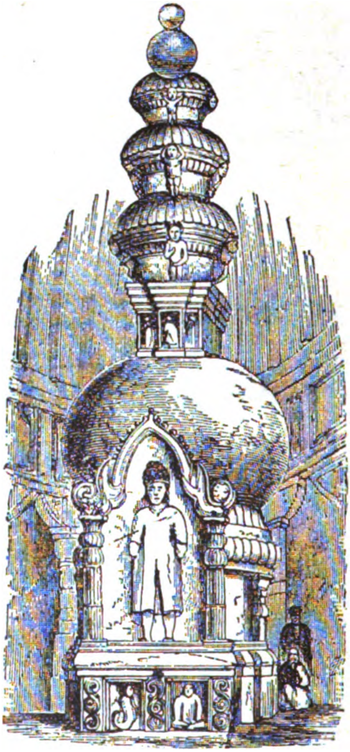


Fig. 2.—Rock-cut Tope at Ajunta (from Fergusson), in which the three umbrellas have become a spire.

TOPEE, or Topi, n. *tō-pē'* [from Port.]: in *India*, a covering for the head, as a cork or pith helmet. **Sola topee,** *sō'lă*, a topee made of *sola* pith

TOPEKA, *tō-pē'ka:* city, cap. of Shawnee co. and of the state of Kan.; on the Kansas river, and on the Union Pacific, the Atchison Topeka and Santa Fé, the Chicago Rock Island and Pacific, and the Missouri Pacific railroads; 45 m. s.w. of Leavenworth, 65 m. w. of Kansas City, 300 m. w. of St. Louis; 6 sq. m. It is in an agricultural, coal-mining, and stone-quarrying region, and on a high and healthful site, with excellent drainage. Water is supplied from the river by the Holly system, constructed 1880 at a cost of $500,000, and there are more than 30 m. of mains and about 300 double hydrants for fire purposes. The city generally is lighted by electricity, there being 3 commercial plants, and a city plant for street lights. Local transit is provided by electric, steam-motor, and, horse-car lines; one electric road having the largest electric railroad plant in the world.—In 1890–1 the net public debt was $341,000; valuation of real property $7,682,460; personal $2,040,945. The city had more than $1,500,000 invested in paving, sewers, water-works, sidewalks, etc., and more than $200,000 in public buildings. A new state capital was in process of erection, to cost when complete at least $2,000,000; and the state had a partially completed lunatic asylum—estimated total cost $1,500,000. The new U. S. Court-house and Post-office cost $300,000. More than 50,000 pensioners draw more than $7,000,000 annually at the U. S. pension office at T. In 1889 there was a total of $7,784,500 invested in manufacturing enterprises, which yielded products valued $3,630,900. In 1891, Sep., there were 4 national banks (cap. $1,150,000), 8 state, 4 private, 1 savings, and 1 incorporated; and a clearing-house assoc.; and 3 daily, 20 weekly, 3 semi-monthly, and 10 monthly periodicals. The public schools (1889) numbered 24, valued at $400,000; the school population was more than 12,000; and 125 teachers were employed. Among denominational schools are Bethany College for Girls (Prot. Episc.), cost $400,000; Washburn College for both sexes (Congl.), cost $500,000; Seminary of the Assumption (Rom. Cath.); and large parochial schools belonging to the Rom. Cath. and German Luth. churches. The Meth. Episc. Church has plans for an advanced school to be known as the College of Topeka. Beside these schools there are numerous private schools, and 3 commercial colleges. The city liberally sustains a public library. There are 48 church buildings of all denominations. In 1889 T. ranked, next to Minneapolis, as the most important milling point in the United States, having 9 mills, with machinery that cost more than $500,000, and a capacity of 2,250 barrels per day. T. was incorporated as a city 1857 and became the state cap. 1861. For the fierce conflict on the slavery question 1854–58, in which T. was prominently involved, see KANSAS.—Pop. (1880) 15,452; (1890) 31,007.

TOPGALLANTMAST: the third mast above the deck, i.e., the mast above the topmast. Hence, the *topgallant sail* is the sail suspended from the topgallantmast.

TOPHACEOUS, a. *tō-fā'shŭs* [L. *tophācĕus*, belonging to tufa or tuff—from *tophus*, tufa or tuff]: of the nature of or resembling tophus; gritty; sandy. **Toph**, n. *tŏf*, or **Tophus**, n. *tō'fŭs*, a swelling affecting a bone or the periosteum; a calcareous concretion about the joints, occurring chiefly in gouty persons.

TOPHANÉ, *tō'fâ-nā* (correctly, **Top-haneh**, *tŏp-hâ'-nĕh*): a suburb of Constantinople (q.v.).

TOPHET, n. *tō'fĕt*, or **To'pheth**, n. *-fĕth* [derived by some from Heb. *toph*, a drum, from the beating of drums, and other discordant noises there, made to stifle the cries of the sacrificed children]: in *Scrip.*, a place s.e. of Jerusalem, in the valley of Hinnom, where the idolatrous Jews worshipped the fire-gods and sacrificed their children (see **Gehenna**).

TOPHUS: see under **Tophaceous**.

TOPIARY, a. *tŏp'ĭ-ėr-ĭ* [L. *topĭārĭus*, belonging to ornamental gardening—from *topia*, ornamental gardening—from Gr. *topos*, a place]: shaped by cutting and clipping, as trees and hedges. **Topia'rian**, a. *tŏp-ĭ-ā'rĭ-ăn*, of or pertaining to ornamental gardening.

TOPIC, n. *tŏp'ĭk* [Gr. *topĭkŏs*, belonging to a place—from *topos*, a place, a topic: F. *topiques*, subjects of conversation: It. *topico*, topical]: subject of discourse or argument; a general head: in *rhet.*, one of the various general forms of argument to be employed in probable, as distinguished from demonstrative, reasoning; a general conception or proposition which may serve as a guide in the invention and choice of suitable arguments; a class or category of considerations or conceptions from which probable arguments can be drawn (see **Topics**): in *med.*, an external remedy. **Topical**, a. *tŏp'ĭ-kăl*, pertaining to a topic (in its rhetorical sense); hence, merely probable, dealing with a particular topic or theme, as a *topical* arrangement; referring to local matters as *topical* allusions: in *med.*, applied externally and to a particular part, as a poultice, a blister, and the like. **Top'ically**, ad. *-lĭ*.

TOP'ICS [Gr. *topike*, from *topos*, a place]: name given by the Greek and Roman rhetoricians and grammarians to the art of discovering arguments. It consisted in the eliciting out of the series of particulars certain general conceptions and propositions, which, in the elaboration of oratorical discourses, served as guides in the invention and choice of suitable arguments. Any one such general conception was called in Greek *topos;* in Latin, *locus communis* (a 'common place'). The Greeks gave much attention to this art; among the Romans, Cicero composed *Topica*, and various other treatises of a kindred nature. During the middle ages, it was proposed to apply it to the whole circle of human knowledge, and even to the solution of the most difficult intellectual problems; but, in general, these efforts only resulted in empty exhibitions of mental vivacity (*jeux d'esprit*); and in modern times the so-called 'art' has been entirely discarded.

TOPLADY, *tŏp'la-dĭ.* Augustus Montague: English clergyman, controversialist, and hymnist: 1740, Nov. 4—1778, Aug. 11: b. Farnham, Surrey. He was educated at Westminster School, London, and Trinity Coll., Dublin; was ordained 1762, and became vicar of Broad Hembury, Devonshire, 1768. He wrote much for the *Gospel Magazine.* T. was a great champion of Calvinism. His controversial writings are directed against the followers of Wesley, and show an unfortunate theological asperity. He was a far better poet than controversialist; and some of his hymns have a place in all popular collections in England and America: one of his hymns is the familiar *Rock of Ages.*

TOPOGRAPHY, n. *tŏ-pŏg'ră-fĭ* [Gr. *topos*, a place; *graphō*, I write or describe: F. *topographie*]: literally, a description of places, as of rivers, hills, woods, etc.; but especially a detailed description of a particular place, as a city, a town, a tract of country, etc., including notices of all its features—differing thus from geography in being more minute. Topographic, a. *tŏp'ō-grăf'ĭk,* or Top'ograph'ical, a. *-ĭ-kăl,* pertaining to topography; descriptive of a particular place or of places. Top'ograph'ically, ad. *-lĭ.* Topographer, n. *tŏ-pŏg'ră-fėr,* one who describes particular places in writing; also Topog'raphist, n. *-fĭst.*

TOPOG'RAPHY, Military: minute description of a place or country, for military purposes. Among the first necessities of a military commander is a thorough knowledge of the physical conformation, the obstacles, and the resources of the region in which he has to operate. It frequently happens that the field of warfare is one of which no careful survey is procurable. It devolves, then, on the officers of the staff to make their chief acquainted with all requisite particulars; hence, topographical drawing is a principal element in military study. One sent out from an army on a topographical survey is expected to traverse a country with rapidity, to measure distances by eye or intuition, to note them down roughly as he rides, to obtain a general knowledge of hills and valleys, of roads and ravines, rivers and the means of crossing them. He must at the same time acquaint himself with the means of sustenance in the country, with the feelings of the people—friendly or hostile—with the transport which can be drawn from the inhabitants, with the position and strength of fortified places, etc. After his reconnaissance, often fatiguing and dangerous, he is expected to submit an eye-map or a full report.—See Engineers, United States Corps of.

TOPONOMY, n. *tŏ-pŏn'o-mĭ* [Gr. *topos*, a place; *onoma*, a name]: the place-names of a country or district; a register of such names. Toponymical, a. *tŏp-o-nĭm'ĭk-al,* of or pertaining to toponomy or place-names.

TOPPED, TOPPING, TOPMOST, etc.: see under Top 1.

TOPPLE, v. *tŏp'pl* [from Top 1]: to fall forward, as something that is top-heavy; to tumble. Top'pling, imp. *-plĭng:* Adj. threatening to fall. Toppled, pp. *tŏp'pld.*

TOP'-SHELL: see Trochidæ.

TOPSY-TURVY, ad. *tŏp'sĭ-tėr'vĭ* [a corruption of the phrase, *topside t'other way;* or, as has been suggested, from the idea that the *topside* is to be *turfy* or placed upon the ground]: in an inverted posture; bottom upward; in confusion.

TOQUE, n. *tōk*, or Toquet, n. *tō-kā'* [F.]: a kind of head-dress, formerly worn by both men and women; a small hat with turned-up brim; in modern usage, a bonnet consisting of a round close-fitting crown without brim. Toque, n. a kind of money of account, equal to 40 cowries, used by traders on the west coast of Africa.

TOR, n. *tŏr* [AS. *torr*, a high hill, a peak (see also Tower)]: in *Devon* and *Derbyshire*, England, a tower; a high, pointed hill; a jutting rock.

TORAH, n. *tō'rā* [Heb. *Torah*, the law]: the laws of the Jews as recorded in the Pentateuch; the Pentateuch.

TORBANE HILL MINERAL: mineral known also as Boghead Coal (see Torbanite), valuable as a source of Paraffin Oil or Naphtha (q.v.). Whether it is to be classed as coal or as shale has been debated among men of science.

TORBANITE, n. *tŏr'bă-nīt* [*Torbane Hill*, near Bathgate, Scotland]: well-known species of cannel-coal, used for the manfacture of paraffin-oil, candles, etc.; Torbane Hill Mineral (q.v.).

TORBERT, *tor'bėrt*, Alfred Thomas Archimedes: soldier: 1833, July 1—1880, Sep. 30; b. Georgetown, Del. On graduating from West Point, he was assigned to an infantry regt., and served 5 yrs. on the frontier. At the outbreak of the civil war he was lieut.; was made col. of the 1st N. J. regt., and capt. in the regular army, 1861. Through the Peninsular campaign he commanded a brigade; was commissioned brig.gen. of volunteers 1862, and was in the battle of Gettysburg. Thereafter he commanded cavalry troops, and 1864, Aug. 8, was chief of cavalry in Sheridan's army of the Shenandoah. By his brilliant services he earned the brevet rank of maj.gen. of vols. 1864, Sep. 19, and of maj.gen. in the regular army 1865. He was in the diplomatic service 1869–78.

TORCE. *tawrss:* in *her.*, garland or wreath of twisted silk, by which the crest is joined to the helmet (see Torse).

TORCH, n. *tŏrch* [F. *torche*, a torch, the wreathed wisp of wad or straw placed between the head and the burden on it—from mid. L. *tortĭa*, a torch—from L. *tortus*, pp. of *torquērĕ*, to twist]: a light to be carried in the hand when lighted, formed of some combustible material, such as resinous wood, or of cotton, hemp, or flax, well tarred, or steeped in grease or the like; a flambeau. Torch-bearer, one who carries a torch lighted. Torch-light, the light given by torches.

TORE, v. *tōr:* pt. of the verb Tear (q.v.): N. the dead grass which remains on mowing land during winter and spring.

TORE, n. *tōr:* see Torus.

TOREADOR, n. *tŏr-ĕ-ă-dŏr′* [Sp.—from *toro*, a bull]: in *Spain*, an amateur bull-fighter, who kills the bull from horseback with a short, broad-headed spear; the *toreador* only appears now at royal feasts in Madrid, and is always accompanied by a troop of professionals; *torero* is the general name for a professional bull-fighter.

TOREUMATOGRAPHY, n. *tō-rū′mă-tŏg′ră-fĭ* [Gr. *toreuma*, embossed work; *graphō*, I write or describe]: a description of sculptures and basso-rilievos, especially in metal; also TOREU′MATOL′OGY, n. *-tŏl′ŏ-jĭ* [Gr. *logos*, discourse].

TOREUTIC, a. *tō-rū′tĭk* [Gr. *toreutikos*, pertaining to work in relief—from *toreuō*, I work in relief]: carved or embossed—applied to figures in metal, hard wood, ivory, etc.

TORGAU, *tor′gow:* town of Prussia, and a fortress of the second rank; on the left bank of the Elbe, 70 m. s.s.w. of Berlin, 12 m. n. of the frontier of Saxony. The river is here crossed by a bridge 500 paces in length, supported on 15 stone piers. Among public buildings are the castle, on an island in the Elbe, begun 1481, now used as a barrack and magazine, and comprising a chapel consecrated by Luther 1544; a town-church, with pictures by Cranach; a gymnasium, and other schools. Weaving and brewing were formerly briskly carried on at T., but this industry has declined. A battle was fought here 1760, Nov., in which Frederick II. of Prussia defeated the Austrians.—Pop. (1885) 10,988—a large proportion soldiers.

TORGET, *tor′ghĕt:* small island off the n.w. coast of Norway, lat. 65° 30′ n. It serves as a landmark to sailors, is the haunt of numerous water-fowl, but is noteworthy chiefly for its lofty rock called Torghatten (the Hat of Torget), which rises 756 ft. above sea-level, and is pierced, near its top, by a cave or passage 80 ft. wide and 1,300 ft. long.

TORLONIA, *tor-lō′nĭ-â:* princely Roman family, remarkable for wealth and for their extraordinarily sudden rise from the very lowest condition. Their origin is traced to a poor 'cicerone,' Giovanni T. (b. 1754), who hung about the Piazza di Spagna in Rome, and gained a precarious living by showing visitors over the Colosseum. By steadiness and honesty, he obtained reputation, became afterward an agent of the French emissaries sent to excite the Roman populace to revolution, and on the failure of this project was left with considerable funds in his hands; he afterward married a widow of some property, and became a merchant, gradually rising, by keen foresight and enterprise, to the position of a stock-broker, usurer, and money-dealer; and by acquiring mortgages over the properties of the impoverished Roman princes, and by various other happy ventures, ultimately amassed immense riches. He was made a grandee of Spain, and Duke of Bracciano by the pope. His three sons allied themselves with princely families of the highest rank; the eldest succeeded to the dukedom, and the two others carried on their father's business. The youngest became Prince of Civitella-Cesi and Duke of Ceri.

TORMENT, v. *tŏr-mĕnt′* [F. *tourment*, torment—from L. *tormen′tum*, a cord or rope, an instrument of torture—from *torquĕō*, I twist]: to put to extreme pain or anguish; to torture: to harass; to distress; to tease or vex: N. *tŏr′mĕnt*, extreme pain; torture; misery. TORMENT′ING, imp.: ADJ. paining to a distressing degree. TORMENT′ED, pp. TORMENT′ER, n., or TORMENT′OR, n. *-ér*, one who torments; a kind of harrow on wheels for reducing a stiff soil. TORMENT′INGLY, ad. *-lĭ*.

TORMENTIL, n. *tŏr-mĕn′tĭl* [L. *tormen′tum*, torture, anguish (see TORMENT)]: plant of the genus *Tormentilla*, ord. *Rosācĕæ*, sub-order *Potentilleæ*, differing from *Potentilla* (q.v.) only in the 4-parted calyx and corolla, and now united with it by many botanists. The COMMON T. (*T. officinalis*, or *Potentilla tormentilla*) is a common plant in moorish and heathy places throughout great part of Europe. It has a large woody root, which has long been officinal, being an agreeable and efficacious astringent, useful in diarrhea and other disorders; and containing tannin, gum, and a red coloring matter, not soluble in water, used by the Laplanders for staining leather red. The leaves are ternate, leaflets lanceolate and inciso-serrate, stems ascending and forking, flowers yellow.

TORMINA, n. plu. *tŏr′mĭ-nă* [L. *tormina*, gripes, colic—from *torquĕō*, I twist]: in *med.*, griping or twisting pains, especially in the belly. TOR′MINOUS, a. *-nŭs*, affected with or characterized by tormina.

TORN, v. *tōrn:* pp. of TEAR (q.v.).

TORNADO, n. *tŏr-nā′dō* [Sp. *tornada*, a return—from *tornar*, to return (see TURN)]: any violent storm, whirlwind, or hurricane, usually attended with thunder, lightning, and rain, generally limited in area, and of short duration; a whirlwind or whirlstorm: see CYCLONE: STORMS: HURRICANE: WIND: WHIRLWIND: ETC.

TORNEA, *tor′nĕ-ō:* river, forming part of the boundary-line between Russia and Sweden; rising in Lake Tornea, in Sweden, and, flowing s.e. and s. between Russia and Sweden, entering the n. extremity of the Gulf of Bothnia, after a course of 250 m. At its mouth is the small town Tornea (q.v.).

TOR′NEA: town in Finland, 65° 50′ n. lat., 24° 10′ e. long.; on the peninsula of Svensar, at the mouth of the Tornea, in the Russian govt. of Uleaborg. The people are engaged in the exchange-trade with the more northern and scantily inhabited districts of Finland and Sweden, of which T. is the active centre, as the most northerly town in the Russian empire; deals, salt-fish, tar, hemp, reindeer skins and other peltries being brought to T., to be exchanged for tobacco, spirits, manufactured goods, etc. T. is often visited in summer by travellers, to witness the sun remaining above the horizon both night and day at the summer solstice. T. was several times taken from Sweden by the Russians before its final cession with all w. Finland, to Russia, at the peace of Frederickshamm, 1809.—Pop. 968.

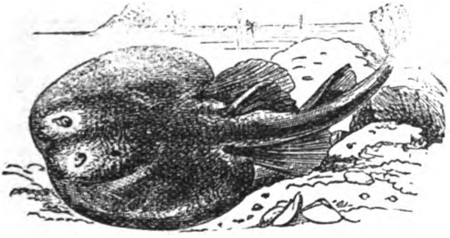
TORO, *tō'rō*, or **TOR'RO**: ancient and decayed town of Spain, in the modern province of Zamora; on the right bank of the Douro, 21 m. e. of Zamora. It contains numerous religious houses, mostly in decay: there are brandy distilleries and brick and tile works.—Pop. 7,000.

TORONTO, *tō-rŏn'tō:* city, cap. of York co. and of the province of Ontario, Canada; on a large sheltered bay on the n. shore of Lake Ontario, lat. 43° 39′ n., long. 79° 23′ w.; 165 m. from Kingston, 310 m. w.s.w. of Montreal, 518 m. s.w. of Quebec, 500 m. n.w. of New York; on a bay on the n.w. shore of Lake Ontario, and on the Grand Trunk and the Canadian Pacific railroads; 15¾ sq. m. The scenery of the vicinity is somewhat tame, and the situation of the town is low and flat, the most elevated quarter—the Queen's Park in the west, containing the univ., observatory, and handsome private residences—being only 100 to 200 ft. above the level of the lake. The harbor or bay, about 5 m. long and a mile wide, is formed by a curving split of land extending 3 m. s. and w. into the lake. T. has somewhat the appearance of an English town; is regularly laid out with streets crossing at right angles; and is provided with city water-works, street railroads, gas and electric light plants, paid fire department, and fire-alarm telegraph and telephone services. There are more than 300 m. of streets, half of which are paved with cedar blocks, stone, and asphalt. A project is being considered to create a new water-supply by bringing water from the lakes n. of the city by gravity, at a cost of about $5,000,000. Among the public parks, which aggregate 1,000 acres, the largest and most attractive are: High, overlooking the lake to the w.; Queen's, with the new houses of parliament facing the main entrance; and Riverdale, overlooking the valley of the Don.—In 1891 there were 10 local banks, and 4 branches of banks in Quebec and Montreal. Of about 160 places of worship, the Meth. Church had 40; Episc. 39; Presb. 28; Bapt. 16; Rom. Cath. 11; Congl. 7; Salvation Army 6; Luth. 2; Ref. Episc. 2; and Jew 2. The most notable edifices architecturally are the Anglican Cathedral of St. James, with a grand steeple and a famous chime of bells; the Rom. Cath. Cathedral of St. Michael, recently improved and redecorated; the Presb. Church of St. Andrew; the Meth. Metropolitan Church; and the Bapt. Church on Jarvis street. There were more than 50 public schools, with 30,000 enrolled pupils and 20,000 in average daily attendance, for the support of which $390,000 were appropriated for the year; beside 17 Rom. Cath. parochial schools, with more than 3,000 pupils, and other Rom. Cath. primary and secondary institutions.—Among the institutions for advanced education, for which T. has long been noted, are Upper Canada College, under the control of the provincial govt.; Trinity Univ., founded by Bp. Strachan, of the Anglican Church, 1851, and having in affiliation with it Trinity Medical College, the Women's Medical College, St. Hilda's College for Women, and several minor schools; McMaster Hall, a Bapt. college, made a univ. 1887, endowed by bequest of the late Senator McMaster with $800,000, and affiliated with several Bapt. colleges; Knox College, the principal theol. school of the Canadian Presb. Church; Wycliffe College, an Anglican theol. school; St. Michael's College, a Rom. Cath. seminary; and a College of Pharmacy, Veterinary College, College of Physicians and Surgeons, Royal College of Dental Surgeons of Ontario, and a College of Music. The most notable institution of all was the Toronto Univ., founded by royal charter as King's College 1827, and liberally endowed with public lands. In 1860 the univ. occupied a new and attractive building that cost more than $500,000, and a beginning had been made in an effort to perfect a complete univ. federation for the whole province; but 1890, Feb. 14, the building was totally destroyed by fire, with its library, valued at $100,000, and a great quantity of invaluable mathematical and scientific material.—The principal public building is Osgoode Hall, the seat of the superior courts of the province. The new municipal buildings and the new houses of parliament were unfinished 1891.—T. has large foreign and domestic trade, and manufactures chiefly boots and shoes, furniture, clothing, whisky, and ale. It was founded 1794 by Gov. Simcoe; was burned by the U. S. troops 1813; was the seat of govt. for Upper Canada till 1841; alternated with Quebec as the seat of govt. 1849–58; and since 1867 has been the permanent cap. of the province. It was known as Muddy York and York till 1834, when it was chartered under its present name.—Pop. (1881) 77,034; (1891) 165,000.

TOROSE, a. *tō-rōs'*, or TOROUS, a. *tō'rŭs* [L. *torus*, a knot or bulge]: in *bot.*, uneven; alternately elevated and depressed; swelling in knobs.

TORPEDO, n. *tŏr-pē′dō* [L. *torpēdo*, stiffness, numbness—from *torpērĕ*, to be still, to be stiff with frost: It. *torpedine*]: the cramp-fish; a fish which gives electric or benumbing shocks when touched; also the genus to which this fish belongs (see below): a machine or engine which, partially submerged in the sea, explodes on contact with a ship's side, either greatly injuring or wholly destroying it; the name is also given to other destructive agents in warfare. *Note.*—TORPEDOES are either submerged and fixed in order to protect a harbor or coast against hostile attacks, or are sent directly against an enemy's ship by means of internal motive-power from a specially constructed and very swift steam-vessel called a TORPEDO-BOAT (see TORPEDOES).

TORPE′DO: genus of fishes of order *Raiiæ* (see RAY), family *Torpedinidæ*. All the *Torpedinidæ* were formerly included in this genus, itself originally formed from *Raia;* but it has been divided into a number of genera, as *Torpedo*, *Narcine*, *Astrape*, etc. The *Torpedinidæ* have a short and not very thick tail, cylindrical toward the end, keeled on the sides. The disk is rounded, and has neither scales nor prickles. The most remarkable characteristic, however, is the galvanic battery, which all the species possess: see ELECTRICITY, ANIMAL. The name T. is commonly extended in a popular sense to all the *Torpedinidæ*. Two species of T. are occasionally found on s. coasts of England—*T. vulgaris* or *marmorata*, which sometimes attains a large size, weighing 100 lbs.; and *T. Nobiliana*, apparently more rare: they are readily distinguished by the spiracles behind the eyes, which are round and fringed at the edges in the former, oval and perfectly smooth in the latter. These and other species are more plentiful in the Mediterranean, and the *Torpedinidæ* generally belong to the warmer seas. The popular names *Numb-fish*, *Cramp-fish*, and *Cramp Ray* are given to torpedoes. The electric shock which a large T. gives when seized is so severe that no one desires to experience it a second time.—*T. occidentalis* occurs on the Atlantic coast of the United States; it is black above and white below. *T. Californica* is spotted.



Torpedo (*Torpedo vulgaris*).

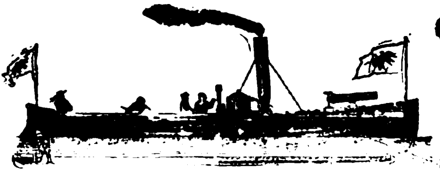
TORPE′DO-BOAT: boat designed to place torpedoes under or against vessels for their destruction. The conception of a modern T.-B. is a very fast vessel, dependent for offensive purposes entirely on torpedoes and on her speed, while the speed is almost her only protection. Everything is sacrificed to high speed, and incidentally to lightness. As a type of a wooden torpedo-boat, the *Stiletto*, of the U. S. navy, may be cited. This boat is 90 ft. long between perpendiculars, 94 ft. long over all, 11 ft. beam, 8 ft. depth, and draws only 2 ft. 10 inches. She is propelled by one 48-inch screw, four-bladed, 80 inches pitch, turned by a two-cylinder compound engine, low-pressure cylinder 21 inches diameter, high-pressure cylinder 12 inches diameter, stroke 12 inches. Her fires are urged by a centrifugal blower. She is to carry Howell automobile torpedoes, and is fitted with a proper gun for their discharge. She is to carry also a Hotchkiss revolving cannon, hand-grenades, and small-arms—the function of these being only to repel boarders. She has made a nautical mile in 2 min. $35\frac{4}{10}$ seconds, or at the rate of nearly 28 land m. per hour. The boiler-pressure then was $164\frac{5}{10}$ lbs. to the sq. inch.—As a type of a steel torpedo-boat, the *Cushing*, also of the U. S. navy, may be described. This ranks as a sea-going boat. She is 137½ ft. long between perpendiculars, 15·05 ft. wide, 9·21 ft. deep, draws 4·50 ft. She is driven by 50-inch bronze twin screws. Her engines are quadruple-expansion, each of 800 horse-power, 15-inch stroke; cylinder diameters, 11½, 16, 22½; and two low-pressure, each 22½ inches. The boilers work at over 200 lbs. to the sq. inch. The hull is of galvanized steel, divided into water-tight compartments, some of which form protective coal-bunkers. The torpedoes are launched by electric connections from one or from two tubes simultaneously at the will of the commander. She carries also a torpedo-gun amidships. The torpedoes can, by the improved mechanism, be discharged while the boat is at full speed. As armament she carries six-pounder Hotchkiss breech-loaders, gatling-guns, etc. Her speed on her trial trip was at the rate of 22½ nautical m. per hour.

In European practice, torpedo-boats have proved poor sea-boats, and very uncomfortable and trying for their crews. Their record is decidedly a bad one as regards breaking down while in service. Their plan of attack is to approach as closely as possible without detection, and then to run toward the enemy at high speed to discharge their missiles. To detect them, the larger vessels are provided with search-lights, while nets are hung over the sides to prevent the torpedoes from striking the hull. Noiselessness is a very important feature, which in the *Cushing* is claimed to be attained in a high degree.

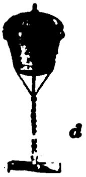
A recent English boat, the *Bathurst*, 130 ft. long, 13½ ft. beam, showed for two hours' run an average speed of 24·426 nautical m. per hour, and for a single mile 26·086 nautical m., or over 30 land m., per hour. The Russian govt. in recent contracts requires, it is said, a guaranty of 26½ nautical m. per hour.

The U. S. dynamite cruiser *Vesuvius*, throwing large projectiles filled with high explosives through the air by compressed air, with a range of more than a mile, is really a special type of torpedo-boat. She is of peculiar type, whose success is not yet proved.

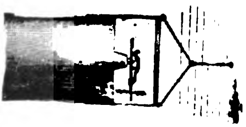
PLATE 2.



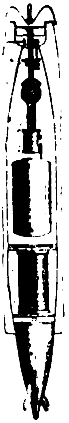
c, Small Torpedo-boat with Pole Torpedoes.



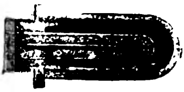
d, Contact Torpedo.



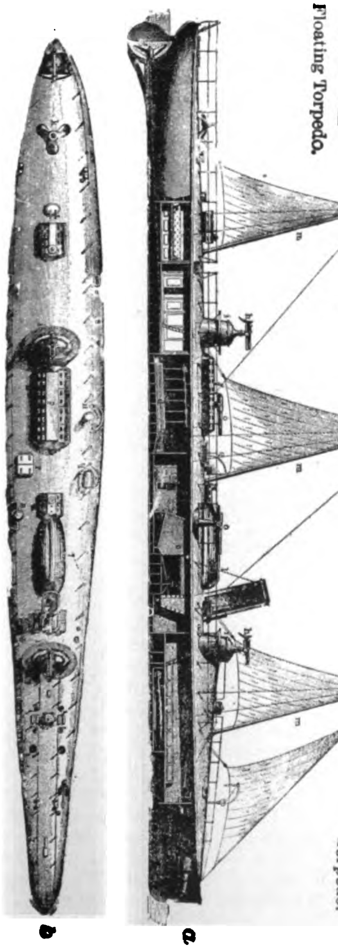
Floating Torpedo.



Electrical-steering Fish Torpedo.



Chemical Cap of Contact Torpedo.



Torpedo-boat built for the Chinese Government.
a. Sectional view. b, Deck plan.

TORPE'DOES: properly, explosive devices for inflicting injuries on an enemy's ships below the water-line, though during the war between the United States and Great Britain 1812–14, this name was applied to mysterious boats invented by Fulton and other Americans intended to be navigated beneath the surface of the water, and directed against the bottoms of hostile vessels. Modern T. are of two kinds—first, the locomotive torpedo, which is in various ways projected against the side of a hostile vessel; this is the torpedo proper, and is an offensive device; secondly, the fixed torpedo, a kind of stationary bomb-shell intended to explode under the bottom of the enemy's ship, and properly a defensive device: to these fixed torpedoes it is now more usual to give the appropriate name of submarine mines.

The weapon was used first by the Russians in the Baltic 1854; but in the Amer. war of secession of 1861–65 it was extensively and often successfully employed. The damage effected by a torpedo exploding beneath a ship is very great, but the failures are very frequent by the explosion happening at a wrong moment. In the Franco-German war 1870–1, the French fleet was effectually scared from the Prussian ports by the dread of T.; and they were much employed in the Russo-Turkish war of 1877.

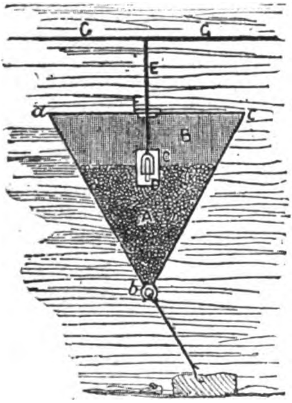


Fig. 1.

Of fixed T., or submarine mines, there are two classes—those which are self-explosive on a ship touching them, and those whose explosion depends on an electric current from the shore. A torpedo of the self-acting class is shown in fig. 1: *abc* is a hollow iron cone, water-tight, with a ring at *b* by which to anchor it. The upper part, B, is left empty, for the sake of buoyancy, while the lower end, A, is filled with gunpowder, the charge varying from 100 to 300 lbs. At the top of the powder is an iron case, C, filled with lime, and in it a tube of thin glass, D, containing sulphuric acid. The upper part of the glass tube is enveloped by the ringed end of the iron rod, E, which passes through the top of the torpedo, and some distance above it; and has horizontal rods, G, called feelers, attached rigidly to its upper extremity. When a ship impinges on the feelers, the rod is deflected from the perpendicular; the ring at its lower end breaks the glass tube; the acid, acting on the lime, generates great heat, and explodes the powder.

In the electric-torpedo a wire insulated in a small cable is laid from a battery on shore to the submarine mine. It enters it by an insulated joint, and is then soldered to a small piece of platinum wire placed in the middle of the priming of the torpedo; from the other end of the platinum a second wire communicates with the metal sides of the torpedo case. On closing circuit at the battery, the current passes by the cable into the torpedo, heating the platinum to incandescence, and exploding the mine. There is thus no need of a second cable; the water and the earth take its place. Submarine mines are charged usually with gun-cotton, which has the great advantage of being explosive by means of a fulminating fuse, even when wet through leakage of the torpedo case.

Submarine mines are usually moored or laid on the bottom in several lines, the mines of the second line opposite the intervals of the first, so that it is difficult for a hostile ship to pass up a defended channel without coming within reach of one or more of them. As a ship approaches, her course is carefully watched so as to fire a mine at the right moment. To explain how this is done, let us take the case of the channel AB.

Two or more lines of mines are laid down across its mouth. For clearness only a few of those of the first line are shown in the diagram. At C and D two stations are selected, commanding a view of the defended waters. At C is the voltaic battery, and the wires from the mines connect them with D, while a second series of wires, each corresponding with one of the first series, connects D and C. There are thus two breaks in the circuit of every mine—one at C, where a number of 'firing-keys' are arranged so as to place at will the battery in connection with any of the wires; the second break is at D, where similar firing-keys connect at will each wire of one series with the corresponding wire of the other. A ship is seen approaching on the course AB. When she is at *a*, the observer at C

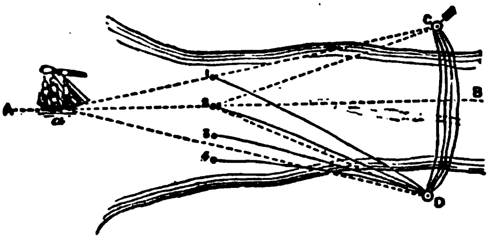


Fig. 2.

notices that her bearing is the same as that of mine No. 1. He therefore closes the break in the first circuit by means of the firing-key, but no current passes, for the observer at D sees her well to the left of the bearing of mine No. 1, and therefore leaves his break open. Not until she is actually over No. 2 will both observers at the same moment see that her bearing corresponds to that of No. 2, and, closing both breaks in the circuit, fire the mine. By means of a telescope combined with the firing-key, these bearings can be taken with great accuracy. In some cases the ship herself is made to close the circuit in striking a rather complicated apparatus called a circuit-closer, which floats above each of the mines arranged on this system.

Of locomotive or offensive T. there are three classes: (1) The Whitehead fish torpedo, which has a fish-shaped case, and is propelled in a straight line under water by means of a small screw-propeller driven by compressed air. It is discharged from a carriage on the deck of a man-of-war, and explodes on impact against the object aimed at. The secret of the construction has been sold by the inventor to the Austrian, Russian, and British navies. (2) The Harvey 'towing torpedo,' which is towed out at an angle from the side of the attacking ship, and maneuvered so as to come in contact with the bottom of the ship attacked, and exploded either mechanically on contact, or by means of an electric fuse, the wire being inserted in the towing-line (these are now considered unavailable). (3) Boom or outrigger T., which are carried on long booms in the bows of boats or steam-launches, and thus driven against the side of a hostile ship and exploded (these also are now considered unavailable).

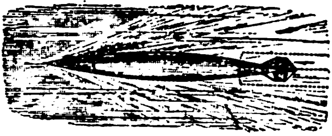


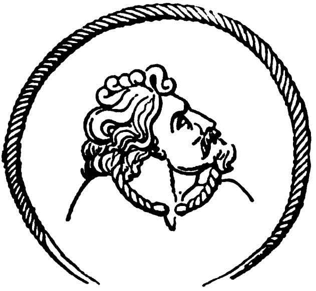
Fig. 3.—Whitehead Torpedo.

Torpedo-nets, for intercepting T., are steel-wire nettings suspended from long booms attached to a ship's side: protective for ships at anchor, but unavailable for ships under way.—See *Fraser's Magazine*, 1872; illustrated articles in the *Popular Science Review*, 1873–75; and Sleeman's *Torpedoes and Torpedo Warfare* (1880).

TORPID, a. *tŏr'pĭd* [L. *torpĭdus*, benumbed, stupefied—from *torpērĕ*, to be still, to be stiff with frost: It. *torpido*]: benumbed; having lost the power of exertion and feeling: dull; inactive; dormant; stupid. **TOR'PIDLY**, ad. *-lĭ*. **TOR'PIDNESS**, n. *-nĕs*, or **TORPIDITY**, n. *tŏr-pĭd'ĭ-tĭ*, numbness; inactivity; sluggishness. **TORPES'CENT**, a. *-pĕs'sĕnt* [L. *torpesco*, I become stiff]: becoming torpid. **TORPES'CENCE**, n. *-sĕns*, torpidness; stupidity. **TORPIFY**, v. *tŏr'pĭ-fī* [L. *faciō*, I make]: to make torpid. **TOR'PIFYING**, imp. **TOR'PIFIED**, pp. *-fīd*. **TOR'PITUDE**, n. *-tūd*, in *OE.*, torpidity. **TOR'POR**, n. *-pŏr* [L.]: numbness; dulness; inactivity; deficient activity. **TOR'PORIF'IC**, a. *-ĭf'ĭk* [*faciō*, I make]: tending to produce torpor.—**SYN.** of 'torpid': dull; inactive; sluggish; numb.

TORQUAY, *tawr-kā'*, or *tawr-kē':* watering-place on the s. coast of Devon, England; occupying a cove on the n. side of Tor Bay, 23 m. s. of Exeter, 220 m. w.s.w. of London. The name is from the Celtic 'Tor' (q.v.), a hill, which occurs in the appellations of the neighboring peaks of Dartmoor (Hey Tor, Rippon Tor, etc.), and thence is given to the bay, and to the ancient parish of Tormoham or Tormohun, in which T. is situate. The monastery of Tor Abbey was founded in the 12th c.; but the town of T. is of recent origin. The bay is noted in history as the place where William of Orange landed 1688, and was often used as a naval rendezvous during the war with France; but till the beginning of the 19th c. T. was little more than an assemblage of fishermen's huts. About that time, the advantages of its climate—which are a peculiarly sheltered position, an equable temperature, and freedom from fogs—made it a resort for consumptive patients; and it soon attained a European celebrity, still almost unrivalled. The romantic hills and valleys of Tormoham and its environs are being rapidly overspread with villas, gardens, terraces, and rows of smaller dwellings. The original parish has been divided into four, and possesses six (Anglican) churches, one Rom. Cath., one Scotch Presb., and several dissenting chapels. A stone pier was built 1803, and the port is resorted to by colliers and small traders. The geological formation consists mainly of a range of transition limestone cliffs in strata much contorted, containing beautifully tinted marbles: there are also Old Red Sandstone and argillaceous shale. The scenery is exceedingly varied and picturesque. Besides the mildness of the winter, the vicinity of the sea in front, and of Dartmoor in the rear, greatly moderates the summer climate, so that, while the mean winter temperature is 44°, that of the summer is only 55°. Kent's Cavern, discovered 1824, and the Brixham Cave, discovered 1858, are rich in fossils, and are among the earliest places in the kingdom in which prehistoric human remains have been found.—Pop. of the urban sanitary district—Torquay and Tormoham—(1801) less than 1,000; (1881) 24,767.

TORQUE. n. *tŏrk*, or TORQUES, n. *tŏr'kwēz* [L. *torquēs*, a twisted neck-chain—from *torqueō*, I twist]: favorite ornament of the anc. Britons, consisting of a collar for the neck,



Torque, with manner of wearing it.—From sculptures on the monument of Vigna Amendola.

formed of a spirally twisted bar of gold, bent round almost to a circle, with the ends free, and terminating in hooks or sometimes in serpents. TORQUED, a. *tŏrkt*, in *her.*, wreathed.

TORQUEMADA, *tor-kā-mâ'thâ*, TOMAS DE: inquisitor-general of Spain: about 1420–1498, Sep. 16; b. Torquemada, Spain. Having entered the order of Friars Preachers (Dominicans), he became prior of the convent of Santa Cruz in Segovia. He was chosen by Ferdinand and Isabella inquisitor-gen. for Castile and Leon 1483. T., though not the first Spanish inquisitor (the office dates from 1480), was the efficient organizer of the Holy Office in Spain. He was pres. of the Holy Office, and sat in the Consejo de la Suprema, or highest court of inquisition, assisted by six apostolical counselors, a procurator fiscal, three secretaries, a head-policeman, a treasurer, two reporters, and as many consulters as he might call. There were, besides the Consejo de la Suprema, four local tribunals. T. drew up a code of procedure for the Holy Office, consisting of 28 articles. Of these, arts. 1–10 deal with summonses to heretics to come forward and confess; 11–13 with penitents; 14–19 treat of the procedure of trial, including torture; 20 and 21 extend the jurisdiction of the Holy Office to the dead. The rest of the articles treat of matters of detail: see INQUISITION.

TORREADOR: see TOREADOR.

TORRE DEL GRECO, *tor'rā dĕl grā'kō:* city of s. Italy, at the base of Vesuvius, 7 m. s.e. of Naples. The town is always new, being from time to time destroyed by the lava, and always raised again from its ruins by the attachment of its inhabitants to their native soil. The soil is fertile, producing fruit and wines similar to those of Greece. Its inhabitants are engaged in the tunny, oyster, and sardine fisheries. Mention is made of the town under its present name (the origin of which is unknown) as early as 1324. It suffered much in the eruption of 1631, and in that of 1794 it was almost totally destroyed by the lava. The earthquake of 1856, and the eruption of 1861, when the town was overwhelmed by vast showers of ashes, were equally destructive. But T. del G. has always risen again from its ruins.—Pop. (1881) 21,588.

TOR'RE DELL' ANNUNZIATA, *dĕl lăn-nôn-sē-â'tâ:* thriving town of s. Italy, on the Bay of Naples and on the s. base of Mt. Vesuvius, 13 m. s.e. of Naples. A fishery and a coasting-trade are carried on.—Pop. (1881) 20,060.

TORREFACTION: see under TORREFY.

TORREFY, v. *tŏr'rĕ-fī* [F. *torréfier*, to torrefy—from L. *torrĕō*, I dry or burn; *facĕrĕ*, to make: Skr. *tarsha*, thirst]: to dry with heat; to roast or scorch; to parch or dry highly on a plate of heated metal or porcelain, as a drug. TOR'REFYING, imp. TOR'REFIED, pp. *-fīd.* TOR'REFAC'TION, n. *-făk'shŭn* [F.—L.]: the operation of drying or scorching by a fire; the state of being roasted or dried. TOR'REFIED-GRAIN, n. in *chem.*, cereals, e.g., barley, maize, rice, etc., which have been submitted for a short time to a relatively high temperature, by which the natural moisture of the grain is suddenly expelled, and in the act of escaping distends each kernel: it is sometimes called white malt, and is used for brewing purposes and for feeding cattle.

TORRENS, *tor'rĕns*, LAKE: sometimes a brackish lake, at others merely a salt-marsh, in S. Australia; lat. 30° 11'—32° s.; long. 137° 30' e.; 30 m. n. of Spencer Gulf; length 130 m.; breadth 18 to 20 m.

TORRENT, n. *tŏr'rĕnt* [F. *torrent*, a torrent—from L. *torrens* or *torren'tem*, burning—said of streams, raging, rushing—from *torrērĕ*, to burn]: a rapid-rushing stream, as lava or water; a stream of water running over a precipice or declivity; a very heavy fall, as of rain; a violent or rapid flow; a raging flood: ADJ. rolling or rushing in a rapid stream.

TORRES STRAIT, *tor'rĕs:* water-passage between N. Australia and Papua or New Guinea; lat. 9° 20'—10° 40' n.; long. 142° 30' e.; discovered by Torres 1606. The channel is about 80 m. in width; and its navigation, though practicable, is rendered dangerous and difficult by innumerable shoals, reefs, and islands.

TORRES-VEDRAS, *tor'rĕs vā'drâs:* town of Estremadura, kingdom of Portugal; on the left bank of the Sizandro, about 30 m. n. of Lisbon. It has some trade in wine, but is notable solely from having given name to those famous lines of defense within which Wellington took refuge 1810, when he found it impossible to defend the frontier of Portugal against the French armies; and from which, in the year following, he issued on that career of slow and hard-won victory which ended in the expulsion of the French from the Peninsula. The *first* or outermost of these lines, extending from Alhandra, on the Tagus, to the mouth of the Sizandro, on the sea-coast, and following the windings of the hills, was 29 m. long; the *second* (and by far the most formidable) lay 6 to 10 m.

behind the first, stretching from Quintella, on the Tagus, to the mouth of the St. Lorenza, 24 m.; the *third*, s.w. of Lisbon, at the very mouth of the Tagus, was very short, being intended to cover a forced embarkation, if that had become necessary. The entire ground thus fortified was equal to 500 sq. miles. Pop. 3,300.

TORREY, *tŏr'ĭ*, **Charles Turner**: anti-slavery martyr: 1813–1846, May 9; b. Scituate, Mass. He was educated at Yale Coll., was a Congl. minister for a time, but devoted his life to anti-slavery work in Md. He was imprisoned at Baltimore for reporting the doings of a convention of slave-holders 1843; and was sentenced to a long term in the state prison, 1844, for attempting to aid fugitive slaves. He died in prison of consumption brought on by hard usage. He had a semi-public funeral in Tremont Temple, Boston; and 'Torrey's blood crieth out' became a watchword of the abolitionists. He wrote, in prison, *Home, or the Pilgrim's Faith Revived.*

TOR'REY, John, M.D., LL.D.: naturalist: 1796, Aug. 15—1873, Mar. 10; b. New York. He was educated in the public schools; studied medicine, and began practice in New York; entered the army as asst. surgeon 1824, and was assigned to duty at West Point, teaching chemistry, mineralogy, and geology. He was prof. of chemistry and botany in the New York Coll. of Physicians and Surgeons 1827–55, at the same time serving in a like capacity in Princeton Coll. and in the Univ. of the City of New York. He was govt. assayer at New York from 1853 till his death. Dr. T. was specially eminent as a botanist: his *Catalogue of Plants Growing Spontaneously within* 30 *m. of New York City* (1819) won for him eminent rank among botanists at home and abroad. His contributions to botanical science were numerous, and are of high authority. He was a trustee of Columbia Coll. (to which he presented, 1856, his herbarium of 50,000 specimens); was one of the founders of the New York Lyceum of Nat. Hist. (now New York Acad. of Science); was first pres. of the Torrey Botanical Club; and was one of the charter members of the National Acad. of Science.—See memoir of T., by Dr. Asa Gray, pub. in the *Biographical Memoirs* of the National Academy.

TOR'REY, Joseph, D.D.: Congregational minister: 1797, Feb. 2—1867, Nov. 26; b. Rowley, Mass. He was educated at Dartmouth Coll. and Andover Theol. Sem.; then for a time had a pastoral charge in Royalton, Vt. He was prof. of Greek and Latin in the Univ. of Vt. 1827–42, prof. of philosophy 1842-67, pres. of the univ. 1862–66. He was author of a *Theory of Fine Art*, and translator of Neander's *General History of the Christian Religion and Church.*

TOR'REY, Joseph William: rajah in Borneo: 1828, Apr. 22—1884, Mar.: b. near Boston, Mass. He was for a short time a journalist in Boston; clerk in a mercantile house in Melbourne, Australia, 1853–57; editor of newspapers in Hong-Kong for a few years; then U. S. consul in Siam. He founded the Amer. Trading Co. in Borneo 1864, and as its manager was made by the sultan of Borneo rajah or gov. of the provinces Amboy and Mavoodu. After 14 yrs. of this governorship, T. became sec. to the U. S. legation to Siam; returned to Boston 1883, and shortly before his death received from the king of Siam an offer of appointment as his chief adviser.

TORREYA, *tŏr'ĭ-a* [named after John *Torrey*, botanist]: genus of *Coniferæ*, tribe *Taxeæ*, comprising several species of evergreen exospermous trees native in N. America, China, and Japan. The leaves, which are linear or lanceolate, are in two ranks; flowers diœcious, the male flowers solitary, the female in twos or threes. The fruit is ovoid, drupaceous, and sometimes 1½ in. long. The American species are *T. taxifolia* (Stink-cedar), of Florida, and *T. Californica* (California nutmeg).

TORRICELLI, *tor-rē-chĕl'lē*, Evangelista: Italian mathematician and philosopher: 1608, Oct. 15—1647, Oct. 25; b. Piancaldoli, in the Romagna, Italy. He was brought up by an uncle, who resided at Faenza, and who put him under the tuition of the Jesuits. When 20 years old, he was sent to Rome, and there pursued mathematical studies. Galileo's theories on force and motion, published a short time before, especially engaged his attention, and led to his publishing a *Trattato del Moto* (1643), and this led to his being invited to visit Galileo; and on the old philosopher's death, three months afterward, he was appointed to succeed Galileo in the chair of philosophy and mathematics at Florence. There he resided till his death. The discovery which will preserve T.'s name through all ages was the interpretation of the previously known fact that water will rise in a suction-pump to the height of only about 32 ft. The fact that water *could* be raised in a pump was expressed by the empirical law that 'nature abhors a vacuum,' and after the limit of 32 ft. was ascertained, the law was modified accordingly by Galileo. T., wishing to perform this experiment more conveniently, employed mercury, and found that nature's abhorrence of a vacuum varied for different fluids, and was represented by a column of fluid in height inversely proportional to its specific gravity; here, then, was an additional fact of great importance, containing the clew to the mystery; and T. was not long in hitting on the idea that the column of fluid was sustained by the pressure of the atmosphere on the open surface of fluid. The vacuum included in the mercurial barometer is known as the Torricellian Vacuum: see Barometer. T. also effected the quadrature of the cycloid, but in this was anticipated by Roberval.

TORRICELLIAN, a. *tŏr′rĭ-chel′lĭ-ăn:* of or discovered by *Torricelli*, a famous Italian philosopher and mathematician, born 1608, to whom is due the merit of discovering the principle of the barometer. T. VACUUM, the vacuum formed above the mercury in the barometer; any similar vacuum.

TORRID, a. *tŏr′rĭd* [F. *torride*—from L. *torridus*, dried up, parched—from *torrērĕ*, to burn: It. *torrido*]: parched; dried with heat; burning; hot; sultry. TOR′RIDNESS, n. *-nĕs*, the state of being parched with heat. TORRID ZONE, the middle zone or belt of the earth's surface, extending on each side of the equator to the tropic of Cancer on the north, and the tropic of Capricorn on the south—so called from its high temperature.

TORRINGTON, *tŏr′ĭng-ton:* town in Litchfield co., Conn.; on the Naugatuck river and the Naugatuck railroad; 28 m. w.-by-n. of Hartford. It contains the village of Wolcottville and the borough of Torrington, and has 1 private and 1 savings bank, 1 daily and 2 weekly newspapers, 7 churches, and manufactures of machinery, hardware, nails, woolen goods, and plated-ware.—Pop. (1880) 3,327; (1890) town 6,048, borough, 4,283.

TORRINGTON, *tŏr′ĭng-ton:* municipal borough and market-town of the county of Devon, England; on an eminence sloping to the Torridge, 10 m. s s.w. of Barnstaple. The inhabitants are employed in agriculture and glove-making; but the industry is inconsiderable.—Pop. (1881) 3,445; (1891) 3,436.

The name of T. emerges frequently during the great civil war; and the capture of the town by Fairfax 1646—on which occasion the church, with 200 prisoners and those who guarded them, was blown into the air by gunpowder—proved fatal to the king's cause in the west.

TORSADE, n. *tŏr-sâd′* [F., a twisted fringe—from L. *torquērĕ*, to twist]: something rolled or twisted, as ribbons, the hair, etc.; a lady's hair arranged in loose fancy rolls.

TORSE, n. *tawrs* [F. *tors*, twisted—from L. *tortus*, pp. of *torquērĕ*, to twist]: in *her.*, a wreath; a twisted scroll. TOR′SEL, n. *-sĕl*, anything in a twisted form.

TORSE: see TORSO.

TORSEL, or TORSAL, n. *tawr′sĕl* [etym. doubt.]: short beam under the end of a girder, where it rests on a brick wall.

TORSHOK, *tor-zhok′:* one of the most ancient towns in Russia, govt. of Tver; on the Tverza, in an undulating district, 309 m. s.e. of St. Petersburg. Leather and malt are the most important articles of manufacture; but the gold and silk embroideries of this town are known throughout the empire, and have obtained a European celebrity. There is extensive trade in corn, purchased at the landing-places of the Lower Volga, and transported to St. Petersburg by water: much of this corn is ground at T., and the flour exported. The town was founded in the 11th c.—Pop. (1884) 12,900.

TORSION, n. *tŏr'shŭn* [F. *torsion*—from mid. L. *torsiô* or *torsiŏnem*, a twisting or wringing—from L. *tortus*, pp. of *torquĕrĕ*, to twist]: the act of turning or twisting: the twisting or wrenching of a body by the action of a lateral force: in *surgery*, a method of checking arterial hemorrhage in certain cases, by drawing out the end of the artery for about a quarter of an inch with a pair of forceps, and then twisting it round several times until it cannot untwist itself. TOR'SIONAL, a. *-ăl*, pertaining to torsion. TOR'TILE, a. *-tĭl*, twisted; wreathed; coiled. TORTIVE, a. *-tĭv*, twisted; wreathed. TORSION BALANCE, instrument invented by Coulomb, in which the force exerted by a twisted thread or filament to recover its original position, is made the means of measuring minute degrees of electrical and magnetical attraction: see ELECTRICITY. It has been used also in determining the mass and density of the earth (q.v.).

TORSK, n. *tŏrsk* [Dan. *torsk*, a species of cod-fish]: the hake-fish, a kind of cod of the genus *Brosmius* (*B. vulgaris*), and family *Gadidæ* (q.v.), abundant in the n. Atlantic Ocean. The genus is characterized by a single long dorsal fin, and by having the vertical fins separate. The T. is 18 inches to 2 ft., rarely 3 ft. long; head small, body moderately elongated, one barbule under the chin, dorsal and anal fins distinct from the tail, though separated from it by a very short interval; tail rounded; head dusky; back and sides yellow, passing into white on the belly. It lives in deep water, approaching the land in shoals only at the spawning-time, very early in the year. It spawns among the sea-weed of the coast. It is caught in the same manner as cod, ling, etc.; and though rather firm and tough when fresh, is generally esteemed, when dried and salted, to be the best of stockfish. It is occasionally caught in the Firth of Forth, but belongs to more n. regions, and is very abundant in the Shetland Isles, the Faroes, on parts of the coast of Norway, and on the s. and w. coasts of Iceland: see HAKE.

TORSO, n. *tŏr'sō* [It. *torso*, the stump of a cabbage, a torso—from L. *thyrsus;* Gr. *thursos*, a stem]: the trunk of a statue; a statue deprived of head and limbs. Of such imperfect relics of classic art, the most famous is the *Torso of Hercules*, a masterpiece of manly beauty, discovered in the Campo del Fiore at the beginning of the 16th c., and placed, by order of Pope Julius II., in the Vatican.

TORSTENSOHN, *tor'stĕn-son*, LEONARD, Count of Ortala: the most enterprising and successful of the Swedish generals in the Thirty Years' War (q.v.): 1603, Aug. 17—1651, Apr. 7; b. Torstena. He became one of the royal pages 1618, and attended Gustavus Adolphus in his earlier campaigns. When Gustavus entered Germany 1630, T. was capt. of the body-guard; and his brilliant services at Breitenfeld, the Lech, and on other occasions, were rewarded with rapid promotion. Taken prisoner at the combat of Nuremberg (1632, Aug. 24), he was subjected to rigorous treatment, which ruined his health, so that on his exchange six months after, he returned to his post in the Swedish army a confirmed invalid; yet a vigorous mind and energetic character so overmastered bodily infirmity, that though reduced to the necessity of being always conveyed in a litter, he proved himself a most able officer under Bernhard of Weimar and Baner, the successors of Gustavus. In 1641, on the death of his former chief, the chivalrous Baner, T. was appointed to chief command of the Swedes in Germany. His military career was marked by brilliancy of conception, fertility of resource, resolute daring, and above all by extraordinary rapidity of execution. Having recruited and equipped his army, he invaded Silesia, routed the Austrians at Glogau and Schweidnitz, reduced most of Moravia, and being pressed back into Saxony by the Archduke Leopold and Piccolomini, gallantly turned on the multitude of his pursuers (1642, Nov. 2), and on the field of Breitenfeld, where Tilly's reputation for invincibility was cast down in the dust by Gustavus, inflicted a bloody defeat on the same adversaries; he then resumed his invasion, and laid Moravia and Austria under contribution. Ferdinand III., despairing of protecting his territories from T., negotiated with Christian IV. of Denmark to make a diversion by invading Sweden; but T., with characteristic promptitude, left Moravia 1643, Sep., traversed Saxony and the Upper Palatinate, burst into Holstein, and in less than six weeks subjugated the Danish mainland. The Austrians under Gallas followed in pursuit of him, to aid their allies, but arrived too late; and in attempting to coop him up in Holstein, were routed, and driven into Saxony; and again totally defeated (1644, Nov. 23) at Jüterbogk, in attempting to bar his return into Bohemia. Gallas was now deposed; but a combination of eminent generals, Montecuculi, Goertz, and others, was equally ineffective against the resistless Swede, who, by a great victory at Yankovitz (1645, Feb. 14), secured the navigation of the Danube, and the possession of the hereditary countries n. of it. The emperor, empress, and principal nobility now deserted the capital; the Saxons again joined the Swedes; and the Danes, routed at sea as well as on land, besought peace, which was granted (1645, Aug. 13). At this time, when a few more of T.'s weighty blows would have completely unseated the Hapsburg family, his gradually increasing ailments compelled him to resign the command to one greatly his inferior, and retire to Sweden, where he had a most distinguished reception from Queen Christina, was created a count, and appointed to various high offices.

TORT, n. *tŏrt* [F. *tort*, wrong—from L. *tortus*, pp. of *torquērĕ*, to twist]: in *OE.*, mischief; calamity; in *law*, injury; damage; wrong. TORTIOUS, a. *tŏr'shŭs*, in *OE.*, injurious; doing wrong; in *law*, implying damage.—*Tort*, in law, is violation of rights pertaining to every person, simply as person—e.g., of the right to personal security, to liberty, to property, to reputation, to service of a minor son or daughter, to companionship of a wife or husband, etc. Hence an injury to person or property or reputation is a T.; and special instances of T. are deceit, libel, conspiracy, malicious prosecution, false imprisonment, abduction and seduction, trespass, infringement of copyright or patent-right or trade-marks, etc. The difference between T. and crime is that T. is an injury to an individual, while crime is injury to the state. And T. is distinguished from an act in violation of contract, in the points following: (1) that persons jointly committing a T. may be in many cases held severally liable without right to contribution from their fellows; (2) that the right of action for T. ceases with death of either party; (3) that persons not qualified to make contracts are liable for their torts. An action of T. must rest on clear proof of the relation of cause and effect between the act and the injury. Further, action of T. generally falls if the plaintiff's negligence has in any degree contributed to the injury.

TOR'TEAU: see ROUNDLE.

TORTILE, TORTIVE: see under TORSION.

TORTILLA, n. *tŏr-tēl'yâ* [Sp.]: a thin unleavened cake of maize-flour, baked on a heated plate or stone.

TORTOISE, n. *tŏr'tĭs* [Prov. *tortesa;* F. *tortue;* Sp. *tortuga*—from mid. L. *tortuca*, a tortoise—from L. *tortus*, pp. of *torquērĕ*, to twist]: a chelonian reptile of the genus *Testudo,* more or less flattened, covered with a very hard shell or case, into which it can draw its head and feet at will; in *anc. warfare,* a Testudo (q.v.).—*Tortoise* is a popular name, used interchangeably with turtle, for any chelonian, though more frequently applied to land species than to aquatic; yet tortoise-shell is from a marine species. The genera are many. In *Testudo,* to which the name is often applied, the carapace is of a single piece, bulged, and attached by the greater portion of its lateral edges to the *plastron* (see CHELONIA); the legs are very short; toes very short, and united to the nails, which are thick and conical, five on the fore-feet and four on the hind-feet. The species are numerous and widely distributed, inhabitants of warmer temperate and of tropical countries. They all feed on vegetable food. Several species are found around the Mediterranean. The most common of these is the GREEK T. (*T. Græca*), which attains a length of 12 inches, and has a broad and equally bulged carapace; the scales of which are granulated in the centre, striated on the margins, and spotted or marbled with black and yellow. Of this species, an individual is mentioned by White, in *Natural History of Selborne.* It lives to a very great age, 100 years or more, as probably do all the other species, and spends the winter in a dormant state, as do all those which are not inhabitants of tropical climates; selecting a place of hibernation or preparing it by scooping a hole in the earth. During the heat of summer it feeds voraciously. The love-season, which is in the beginning of summer, is one of great activity; and tortoises express their amorous desires by striking their shells against those of their mates. The Greek T. is used for food in parts of S. Europe. The flesh of all species of T. appears to be good for food, and the eggs of all are regarded as delicacies. A very large species is the Indian T. (*T. Indica*), if several species are not confounded under that name. It has been found on the coast of Coromandel four ft. and a half in length, its bulge being about 14 inches. It is particularly abundant in the Galapago Islands, and has even been supposed by Darwin to be originally a native of them, and to have been diffused thence by the buccaneers over other tropical regions. The Galapago T. is often 200 lbs in weight. Its flesh is of excellent quality. It forms tracks from the arid districts near the shore to the high districts of the islands, where there are springs, for the purpose of drinking: it swallows a very large quantity of water at a time. The numbers of tortoises in some tropical and subtropical countries are very great.

For N. American species, see TURTLE.

Tortoises show very little intelligence; they are, however, capable of recognizing the hand that feeds them.

TOR'TOISE PLANT: see HOTTENTOT'S BREAD.

TOR'TOISE-SHELL: the large scales of the carapace or shield of a species of sea-turtle, *Chelonia imbricata* and *Testudo imbricata* of several authors—*Caretta imbricata* of Dr. Gray—found in the Indian Ocean, Amboyna, New Guinea, Seychelles, Havana, and the Red Sea, etc., and manufactured into various articles of ornament and use. T.-S. is so called because formerly the order of animals to which it belongs was little known, and all were confounded under the general name Tortoises. A remarkable peculiarity in this species is the arrangement of the 13 plates forming the carapace, which, instead of being joined together by their edges, so as to make apparently one piece, are thinned off at their edges, and overlap each other like the tiles of a roof. They vary in size according to the part of the shield that they occupy. The larger are sometimes 12 to 18 inches long, by 6 inches broad; the thickness rarely exceeds the eighth of an inch. This material has beautiful mottled color, and is semi-transparent. A remarkable quality, which greatly increases the usefulness of T.-S. for ornamental purposes, is its property of being easily softened by a heat equal to that of boiling water, and of retaining any form when cold which has been given to it when heated. Pieces can also be welded together by pressure of hot irons. Its chief use is in making combs for the hair; but it is used also for inlaying small pieces of ornamental furniture and fancy objects.

TORTO'LA: see VIRGIN ISLANDS.

TORTONA, *tor-tō'nâ* (anc. *Antilia*, or *Dertona*): town of n. Italy, province of Alessandria, on the right bank of the Scrivia (a small river which flows n. to join the Po), and 13 m. e. of Alessandria, with which it is connected by railway. The principal buildings are the *Duomo* and church of San Francesco. T. has manufactures of silk, leather, hats, etc. It was a notable place in the middle ages—the old walls, and the ruins of a castle in which Frederick Barbarossa lived, being a relic of those turbulent times. Its fortifications were destroyed by the French, after Marengo, 1799.—Pop. (1881) 9,023.

TORTOSA, *tor-tō'sâ* (anc. *Dertosa*): old fortified town of Spain, province of Tarragona; picturesquely situated on a sloping eminence overlooking the Ebro, about 22 m. from the mouth of that river. The streets are narrow, and the place has altogether a dull look. Some inconsiderable manufactures are carried on, and the sturgeon and lamprey fisheries afford employment.—Pop. (1887) 25,192.

TORTUGAS, *tor-tō'gas* (Sp., Turtles): group of ten islets or keys, called also the Dry Tortugas, belonging to the United States; at the entrance of the Gulf of Mexico, 120 m. w.s.w. of Cape Sable, s. point of Florida. They are low coral islets, partly covered with mangrove bushes. There is a light-house on Bush Key; and on the same island stands Fort Jefferson, garrisoned by about 100 men. During the civil war, the fort was used as a penal station for Confederate prisoners.

TORTUOUS, a. *tŏr'tū-ŭs*, or **Tor'tuose**, a. *-ōs* [L. *tortŭōsus*, full of crooks or turns—from *tortus*, twisted; *torquērĕ*, to twist: It. *tortuoso*: F. *tortueux*]: twisted; winding; having many crooks and turns; crooked; disingenuous; deceitful, as a *tortuous* policy. **Tor'tuously**, ad. *-lĭ*. **Tor'tuousness**, n. *-nĕs*, or **Tor'tuos'ity**, n *-ŏs'ĭ-tĭ*, state of being crooked and winding; wreath; flexure.

TORTURE, n. *tŏr'tūr* or *-chûr* [F. *torture*—from mid. L. *tortūra*, torture—from L. *tortus*, pp. of *torquērĕ*, to twist]: extreme pain; anguish of body or mind; agony; severe pain inflicted as a punishment, or for the purpose of extorting a confession: V. to pain extremely; to put to the rack; to torment; to harass; to vex. **Tor'turing**, imp.: Adj. tormenting; keeping on the rack; vexing. **Tor'tured**, pp. *-tūrd* or *-chûrd*. **Tor'turer**, n. *-tū-rėr*, one who tortures. **Tor'turingly**, ad. *-rĭng-lĭ*.—*Torture* has been (and still is) largely used in many countries as a judicial instrument for extracting evidence from unwilling witnesses, or confessions from accused persons. In ancient Athens, slaves were examined by T., and their evidence seems on this account to have been deemed more valuable than that of freemen. Any one might offer his own slave, or demand that of his opponent, to be examined by T.; and it was a presumption against any one that he refused to give up his slave for that purpose. No free Athenian could be examined by T., but T. seems to have been used occasionally in executing criminals. Under the Roman republic, only slaves could be tortured, and, as a general rule, they could not be tortured to establish their masters' guilt. Under the empire, T., besides being much used in examining slaves, was occasionally inflicted even on freemen, to extract evidence of the crime of *læsa majestas*. Cicero and other enlightened Romans wholly condemned its use. Until the 13th c. T. seems to have been unknown to the canon law; about that period, the Roman treason-law began to be adapted to heresy as *crimen læsæ majestatis Divinæ*. A decree of Pope Innocent IV., 1282, calling on civil magistrates to put persons accused of heresy to the T., to elicit confessions against themselves and others, was probably the earliest instance of ecclesiastical sanction for this mode of examination. Afterward T. was largely employed by the inquisitors (see INQUISITION).

From the civil law, T. became a part of the legal system of most European countries. It was adopted early and largely by the Italian municipalities. In Germany, elaborate apparatus for its infliction existed, not only in the dungeons of the feudal castles, but in the vaults beneath the town-halls of Nuremberg and Ratisbon, where the various implements used are yet seen. It continued in the prisons of Germany when they were visited by Howard 1770. In France it was part of the judicial system till 1789; in Scotland it was in frequent use after the Restoration, and was only abolished by 7 Anne, c. 21, s. 5.

The use of T. seems always to have been repugnant to the genius of the law of England: though occasionally used by an exercise of prerogative, it may be doubted whether it was ever recognized as lawful in the ordinary administration of justice. Its first recorded use is in 1310, in aid of the ecclesiastical law, during the struggle between Pope Clement V. and the Templars. Edward II., when applied to to sanction the infliction of T. by the inquisitors in the case of certain Templars accused of heresy and apostasy, at first refused; but on remonstrance by Pope Clement, he referred the matter to the council; and on recommendation of the council, the inquisitors were authorized to put the accused to the T., but without mutilation or serious injury to the person, or effusion of blood. During the Tudor period, the council assumed the power of directing torture-warrants to the lieut. of the Tower and other officers, against state prisoners and occasionally also against persons accused of other serious crimes; and similar warrants were at times issued under the sign-manual. Under James I. and Charles I., T. was less frequent, and only in state trials. In 1628, in the case of Felton, assassin of the Duke of Buckingham, the judges declared the examination of the accused by T., for discovering his accomplices, to be illegal. T. was inflicted for the last time in England 1640, May. It is now disused in all countries of Europe, and is universally acknowledged to have been a most unsatisfactory mode of procuring true testimony, often leading the innocent, from mere weakness of body, to plead guilty.

The instruments of judicial T. have been various. The most celebrated is the Rack, an oblong horizontal frame, on which the accused was stretched, while cords attached to his legs and arms were gradually strained by a lever or windlass, an operation which, when carried to extreme severity, dislocated the joints of the wrists and ankles. The rack is as old as the 2d c. in s. Europe, but is said to have been unknown in England until introduced into the Tower by the Duke of Exeter, constable of the Tower, whence it acquired the name 'Duke of Exeter's Daughter.' In Germany the rack was sometimes furnished with a roller, armed with spikes, rounded off, over which the sufferer was drawn forward and backward A vertical rack also was in use in that country. The person subjected to it was raised to the roof by a rope attached to his arms, which were bound behind his back; and two heavy stones having been attached to his feet, the rope was loosened so as to let him fall with a jerk to within a few inches of the ground. Among the lesser tortures were the Thumbikins, Boots, Pincers, and Manacles; and in England an instrument called the Scavenger's (properly Skeffington's) Daughter, the invention of Sir W. Skeffington, lieut. of the Tower in the reign of Henry VIII.

TORULA, n. *tŏr'ū-lă* [L. *torŭlus*, a tuft of hair—from *torus*, a bulge]: genus of fungi.—TOR'ULA CEREVIS'IÆ, the yeast-plant, one of the fungi connected with the process of fermentation (see YEAST). This plant (*Saccharomyces cerevisiæ*) may be readily observed by examining a little yeast under the microscope, when it will be seen in the form of round or oval corpuscles (cells), averaging $\frac{1}{3000}$ of an inch in diameter, and many having smaller corpuscles in their interior. They grow by protrusion of gemmules, and germinate sometimes on one and sometimes on several spots of the primitive fungus cells. These shoots throwing off new gemmules, the yeast-plant gradually forms single or branching rows of oblong cells, connected like beads. This peculiar arrangement of the cells, and the fact that they are not acted on by acetic acid, is characteristic of the plant.

This fungus exists in the saccharine urine of *diabetes mellitus*, after it has been discharged for 24 hours or longer, and its appearance in urine within a day or two is sufficient to lead to the suspicion of the presence of sugar. It is frequent likewise in vomited matters and in fecal evacuations; and, wherever found, it is indicative that the fluid is in a state of saccharine fermentation.

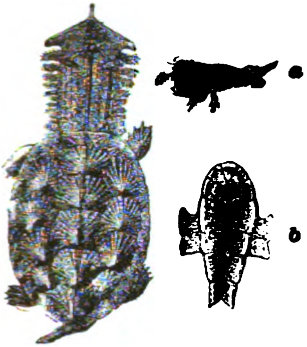
As fungi more or less closely resembling the yeast-plant often occur in non-saccharine urine that has stood for some days, the assumed presence of the T. cerevisiæ must not be taken as proof of the presence of sugar, though it affords a strong hint for testing for that substance.

TORULOSE: see under TORUS.

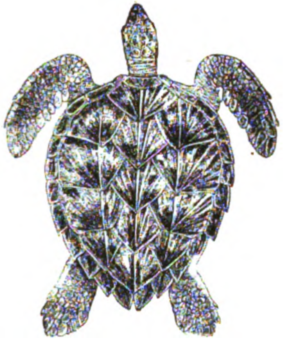
TORUS, n. *tŏ'rŭs*, or TORE, n. *tōr* [L. *torus*, a thing swelling out, a bulge: It. *toro:* F. *tore*]: in *arch.*, a large convex molding in the bases of columns, the profile of which is semicircular (see COLUMN): in *bot.*, the axis on which all the parts of the floral whorls within the calyx are seated. TORULOSE, a. *tŏr'ū-lōs'*, or TOR'ULOUS, a. *-ū-lŭs*, in *bot.*, having successive rounded swellings, as the pods of some cruciferous plants; swollen and constricted alternately.

TORY, n. *tō'rĭ* [Gael. and Ir. *taobh-righ*, pronounced somewhat like *tō're* or *tŭ'rē*, the king's side—from *taobh*, side or part; *righ*, king: said by others to be from the Irish robber word *toree*, give me—i.e., your money—subsequently applied to Rom. Cath. outlaws in Ireland, then to those who refused to concur in excluding a Rom. Cath. prince from the throne]: originally, an Irish robber or outlaw; in *British politics*, a term opposed to *whig*—applied first in

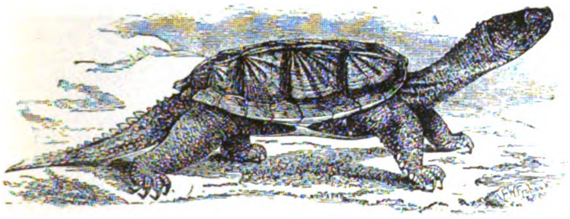
PLATE 3.



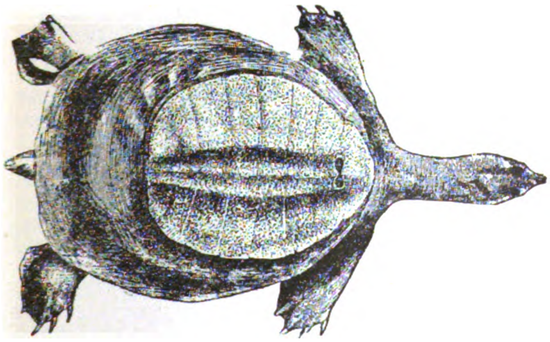
The Matamata, with side-view of head, *a*, and separate view of plastron, *b*.



Hawksbill Turtle.



Alligator Terrapin.



Upper View of the Turtle of the Euphrates.

1680 as a term of reproach to the members of the court party, which refused to concur in the measure introduced by the whigs for exclusion of the Duke of York, a Rom. Cath. prince, from the throne; an adherent of the party which maintains certain traditional constitutional principles of public policy; the political successors of the *tories* are now commonly known as *conservatives:* in the *United States*, a member of the British party during the revolutionary period; a loyalist. The estates of tories were in many instances confiscated; and many tories settled in Canada and other Brit. colonies· **Tory**, a. of or pertaining to the tories. **Toryism**, n. *tō'rĭ-ĭzm*, principles of the tories.

TOSE, v. *tōz* [see Tease 1, and Touse]: in *OE.*, to tease, as wool.

TOSHACH, *tŏsh'ăch* [Celtic, 'captain']: among Celtic nations, the military leader of a clan or tribe, whose functions were in early times always separated from those of the supreme judicial officer. When the office of T., originally elective, became hereditary, according to the principle of divided authority characteristic of Celtic communities, it remained permanently in the eldest cadet of the clan. See Tanistry.

TOSS, v. *tŏs* [W. *tosio*, to jerk; *tos*, a toss, a jerk: Norw. *tossa;* Low Ger. *tösen*, to let drop, to scatter in small portions]: to throw with the hand; to throw upward; to lift or throw up with a sudden or violent motion; to fling; to pitch; to make restless; to disquiet; to roll and tumble; to be in violent commotion: N. act of tossing; affected manner of raising the head. **Toss'ing**, imp.: N. the act of throwing upward; a rising and falling suddenly; a rolling and tumbling. **Tossed**, pp. *tŏst*. **Toss'er**, n. *-ėr*, one who tosses. To **toss off**, to drink off without ceremony or delay; to make short work of. To **toss the oars**, to raise them perpendicularly with their blades upward, as a salute. To **toss up**, to throw a coin up into the air and bet on which side it will fall. A **toss-up**, an uncertainty. To **toss hay**, to throw up and turn it over. **Toss-pot**, n. a toper; a drunkard. **Tossed by a bull**, thrown up by his horns.

TOT, v. *tŏt* [the syllables *tat*, *tot*, *tit*, are used in forming words signifying broken sound, then short abrupt movement, a small quantity: Icel. *tottr*, little: Norw. *tot*, a murmur: Icel. *titra*, to shiver: Dan. *tot*, a flock of wool]: anything small, as a term of endearment; anything small of its kind. To **tot about**, to move about with short steps, as a child attempting to walk, or a feeble old person. **Tot'ty**, or **Tottie**, a. *tŏt'tĭ*, unsteady; dizzy; small. **Tot'ter**, v. *-tĕr*, to shake as if about to fall: to be unsteady; to shake. **Tot'tering**, imp.: Adj. threatening to fall. **Tot'tered**, pp. *-tĕrd*. **Tot'teringly**, ad. *-lĭ*. **Tot'terer**, n. *-ėr*, one who totters.

TOT, v. *tŏt* [contr. of Total]: *familiarly*, with *up*, to sum; add; reckon, as to *tot up* the bill.

TOTAL, a. *tō'tăl* [F. *total*—from mid. L. *totā'lĭs*—from L. *totus*, all, whole: It. *totale*]: whole; complete; entire; undivided; absolute: N. the whole; the complete sum or amount. **To'TALLY**, ad. *-lĭ*, wholly; completely. **TOTALITY**, n. *tō-tăl'ĭ-tĭ*, the whole sum or amount; wholeness; completeness. **IN TOTO**, *tō'tō* [L.]: in the whole; altogether. —SYN. of 'total, a.': whole; entire; perfect; integral; complete.

TOTAL ABSTINENCE FROM ALCOHOLIC BEVERAGES: one of the steps in the movement for suppression of intemperance. This reform has passed, in America, through a series of well-defined stages. The first temperance societies (see TEMPERANCE MOVEMENT) were organized to discourage the 'too free use' of ardent spirits. In a brief time, entire abstinence from ardent spirits was urged. Later still (1836), the reformatory force of the 'moderation' movement having apparently spent itself, the advance was made to T. A. from all intoxicating drinks (including beer, ale, wine, and cider). The next stage (1840–44) may be said to have begun with the Washingtonian movement, the first general effort to reclaim drunkards. Then (1844–48) came the local option movement, in which the power of law was invoked on an extended scale; and this was followed (1851–56) by the era of Prohibition (q.v.). In each case the change made was to a more radical basis, and was made not from mere choice, but was apparently forced on the leaders of the movement by what they felt to be its logical and historical development.

History.—The T. A. movement was fairly inaugurated in 1836, when the National Temperance Convention, assembled in Saratoga Springs, N. Y., adopted, after much warm discussion, a resolution in favor of 'total abstinence from all intoxicating liquor as a beverage' (Dorchester's *Liquor Problem in All Ages*, 264). Prior to this, many local and even state societies had placed themselves on the same basis, and the action of the National Convention was the result of several years of agitation. The movement, by this advance, aroused new and formidable opposition. Not only was that of the makers, sellers, and drinkers of wines, beer, and cider, incurred, but a number of the friends of temperance regarded the step as extreme and likely to produce an unfavorable reaction. This antagonism appears, however, to have been confined to individuals, the temperance organizations as a rule indorsing the position without further hesitation. At this time the number of temperance societies in the United States had reached about 8,000, with estimated enrolment of 1,500,000 (*Permanent Temperance Documents*, 474). In the period 1838–40, according to Dorchester, 'the tide of reform' 'came nearly to a stand.' Evidence is lacking as to the reason of this; but it was due probably to the new and strong opposition engendered, and perhaps to hesitation and distrust of the wisdom of the new basis adopted. In Ireland, however, the new movement, under the inspiring leadership of Father Mathew, advanced with rapid strides, about 9,000 persons enrolling their names in the first nine months of his labors (Burns's *Temperance History*, I. 139); and in 1840 the most remarkable uprising yet witnessed—the Washingtonian movement—began in the United States. This movement had its beginning in a public-house (Chase's Tavern) in Baltimore, being started by a club of six tipplers, who for some reason suddenly pledged each other to T. A., and organized the Washington Society, 1840, Apr. 2. In one year's time the society numbered in its membership 1,000 reformed drinkers. In 1841 and 2, immense meetings were held in the largest cities, and thousands were pledged. In the three years during which the movement lasted, it is estimated that 600,000 drunkards were induced to reform, 'of whom 450,000 returned to their old habit.' (*Liquor Problem in All Ages*, 271). The movement was emotional rather than educational. It aroused the country, however, as nothing else had done, and resulted in the formation of secret temperance societies, which have been ever since permanent educational organizations. To this movement was due the reformation of John B. Gough (q.v.), who at once, 1842, began his wonderful career as a temperance apostle, a career which lasted until his death 1886.

Before the Washingtonian movement had ended, the energies of the temperance advocates had been directed, with increasing vigor, toward the laws relating to the liquor traffic. While the activities of 30 years had achieved results not inconsiderable, it was felt and acknowledged that, in comparison with the evil remaining, those results were very unsatisfactory. Almost from the beginning, strong protests against the license laws were uttered, and in 1844 these protests had assumed the form of organized action. From 1844 to the opening of the civil war, the aggressive work of the temperance advocates in the United States was directed chiefly toward the repeal of those laws and a reversal of the attitude of government from one of protection for the business to one of prohibition (see PROHIBITION). The educative work was continued, probably even intensified; but it no longer stopped at the duty of the individual in relation to his personal habits: it went farther, and arraigned the state and the citizen as participators in the responsibility.

The years of the civil war, the five years preceding, and the five subsequent years, composed a retrograde period. In the agitated condition of the country before and during the war, other issues likely to divide the support of the government were remanded to the rear. The moral and social demoralizations incident to a great war, the need of large revenues and the discovery of the ease with which they could be raised by taxes on liquor, the rapid growth in the brewing industry and the organization of its promoters, and the rapid influx of foreign immigrants—all conduced to the reaction. The close of the war found most of the prohibitory laws either repealed or unenforced. The mind of the public, relieved of the stress and strain of war, was soon called to grapple with almost equally important problems of reconstruction; and while the temperance activities were at no time suspended, they were more than counterbalanced by adverse influences. This retrograde movement received its first decided check toward the close of 1873 by the Women's Crusade. This was a remarkable movement inspired by Dr. Dio Lewis, which began in Hillsboro, O., and spread into a large number of states, creating for a time intense excitement. Women of social influence and refinement organized themselves into praying bands which went to saloon after saloon, not forgetting drug-stores and taverns, and endeavored by prayer and persuasion to secure from the seller of intoxicating drink a pledge to cease the sale. Out of this uprising, necessarily transient, but powerful in its influence, was born the Woman's Christian Temperance Union (q.v.), probably the most powerful temperance soc. ever formed. About the same time (1874), the Red Ribbon movement (afterward the Blue Ribbon movement) was inaugurated in Maine. This was a repetition in most respects of the Washingtonian movement. The principal figures in it were Dr. Henry A. Reynolds, a reformed drinker, and Francis Murphy, a reformed drinker and saloon-keeper. This reform work was kept alive by reform clubs, by the secret temperance societies, and by the gospel temperance meetings held by the Woman's Christian Temperance Unions, and is at the present time an important branch of the temperance work. In 1880 the Prohibition movement again set in (see PROHIBITION).

Total Abstinence Societies.—The more important of these are the Independent Order of Good Templars, organized 1851, and numbering (1890) about 12,000 lodges and 600,000 members in America, Europe, Asia, Africa, and Australia; the Sons of Temperance, organized 1842, and numbering (1890) about 1,600 subordinate divisions and 85,000 members in N. America; the National Temperance Soc. and Publication House, organized 1865; the National Woman's Christian Temperance Union, organized 1874, with a membership (1890) of about 150,000, not including the juvenile department; the World's Woman's Christian Temperance Union, organized 1883; the Catholic Total Abstinence Union, organized 1872, and enrolling (1890) about 56,000 members. In addition, there is in most of the states some form of a state temperance society, and there are many societies organized in connection with churches.

Total Abstinence in Other Countries.—The impetus given to T. A. by Father Mathew, in Ireland, exerted an immediate effect throughout the United Kingdom. Societies had been organized some years before (1830–1) in Ulster, Glasgow, Bradford, and London; but, like the societies in America till that time, were based on 'moderation.' The first T. A. soc. was organized in the town of Preston, Lancashire, England, 1832, Joseph Livesey being the prime mover. Two years later 150,000 members were enrolled in similar societies. By 1841 the temperance movement had placed itself, throughout the United Kingdom, on the T. A. basis. At the World's Temperance Convention, London 1846, it was estimated that there were connected with T. A. societies, in America, 7,000,000 members; in Ireland, 5,000,000; in England and Scotland, 3,000,000; on the continent of Europe and in the Brit. colonies, 3,000,000. The work in the United Kingdom has made steady progress, but on the educative rather than the political or legislative line. The principal T. A. societies are: National Temperance League, organized 1856; British Women's Temperance Assoc., 1876; Irish Temperance League, 1858; Scottish Temperance League, 1844; the Independent Order of Rechabites, 1835; the Good Templars; the Sons of Temperance; and the United Temperance Order. The juvenile organizations are the juvenile branch of Good Templars and the United Kingdom Band of Hope Union. The United Kingdom Alliance, organized 1853 for legislative work, has of late years been very active and influential, chiefly in securing the passage by parliament of the 'local veto' bill, giving to localities the right to determine whether or not licenses for public houses shall be issued—similar to the local option laws of the United States. It does not require T. A. of its members, but its teachings and its legislative demands are predicated on the T. A. principle. The Church of England Temperance Soc. has two sections, one consisting of total abstainers, the other of total abstainers and 'moderate' drinkers who are willing to co-operate for social and legislative purposes.

Argument for Total Abstinence.—This is twofold—moral and scientific the former argument rests, however, to a considerable degree on the latter. The effects of alcohol, it is claimed, on the human system are so cumulative and so deceptive that there is but one safe rule to be followed or taught. While many may be able to drink sparingly and with self-restraint, it is pointed out that no individual has a sufficient knowledge of his own physical nature to be able to decide whether or not he can drink without in time becoming bound in the chains of habit. Great emphasis is laid on the evil effects which the example of 'moderate' drinking is believed to exert upon the young; and in this respect the influence of the 'moderate' drinker is pointed to as more dangerous (because more attractive) than that of the inebriate. The teaching of Paul (I Cor. viii. 13) is cited in this connection as obligatory—in principle—on the Christian to-day: this citation, however, has called forth strong dissent. In further opposition to this view, the Bible is quoted to show that alcoholic wine was drunk by Christ and his followers, and was often used in the Old Testament to typify a blessing. In response the theory has been advanced that two kinds of wine are spoken of in the Scriptures, one being the fermented, the other the unfermented juice of the grape, the terms *yayin* (Hebrew) and *oinos* (Greek) being generic terms, covering both kinds of wine, and the term *tirosh* (Hebrew) being a specific term used to designate unfermented wine only: this also is strongly denied by many eminent biblical scholars.. Many, however, who reject the two-wine theory advocate T. A., claiming that Christ's diet is in no respect obligatory on Christians, and that, whatever may have been the social or other effects of such a diet in that day, the evil consequences resulting from it now render T. A. obligatory on those who would follow the spirit of Christ's teachings. This view is very largely accepted in most of the evangelical denominations in America.

The scientific argument is, in brief, that alcohol is an irritant poison which serves no useful purpose in any healthy system. The controversy on this point dates back to 1842, when Baron Liebig, in his classification of foods, placed alcohol in the list of respiratory or heat-producing foods, expressly stating that it could not be a structure-building food. This classification was accepted until, 30 years later, Lallemand and Perrin, of France, claimed to have demonstrated by a series of experiments that alcohol was eliminated from the human system unchanged by combustion or any other process; and that none of its derivatives, such as aldehyde and acetic acid, such as would be produced by combustion, could be traced in the system. Their conclusion that alcohol was an intruder in the body was in turn accepted until the experiments of Anstie, Thudichum, Schulinus, and Dupré, which seemed to indicate that but a portion of the alcohol was eliminated unchanged, the rest disappearing in the system and presumably being used in heat-production. Later still, however, Dr. Benjamin W. Richardson (q.v.), following on the same track that Dr. N. S. Davis, of Chicago, had pursued, by a series of elaborate experiments seemed to show that the result from the use of alcohol was a lowering of the temperature, instead of the contrary. Since then the ground of dispute has shifted. It is now claimed that alcohol, while not a direct food, serves the same purpose indirectly by retarding the destruction of tissues which is one of the invariable effects of vital processes. This, again, is disputed. It is urged that, while the elimination of the waste tissue is obviously retarded, its destruction is not shown to be retarded; and that in any event, since both the destruction and the elimination of these tissues are a natural part of the vital process, the retardation of either would be injurious, not beneficial. So far as any results have been reached from the controversy, they may be safely said to be comprised in the statement by Dr. Willard Parker that alcohol has no place in a *healthy* body. Even its defenders, moreover, claim that it is of dietetic benefit only when taken in doses much smaller in amount than that contained in an ordinary 'drink' of anything but very light wines or beers. None of the T. A. societies, it may be added, pledge their members against the use of alcohol or alcoholic liquors as a medicine, taken on the advice of a physician.—See ALCOHOL: FOOD AND DRINK.

Another argument of considerable force is derived in behalf of T. A. from the results of experience on the part of life insurance and mutual benefit societies—the rate of mortality among total abstainers being materially less than that among 'moderate' drinkers.—See **Temperance Movement**: also references under it.

Bibliography.—Dorchester's *The Liquor Traffic in All Ages; Cyclopædia of Temperance and Prohibition;* Burns's *Temperance History;* Willard's *Woman and Temperance;* Mother Stewart's *Memories of the Crusade;* Blair's *Temperance Movement; Centennial Temperance Volume; One Hundred Years of Temperance;* Gustafson's *Foundation of Death* and *The Drink Problem;* Gough's *Platform Echoes* and *Autobiography;* Grindrod's *Bacchus;* Kerr's *Inebriety;* Lee's *Bible Commentary* and *Text-book of Temperance;* Hoyle's *Our National Resources, and How They Are Wasted;* Richardson's *Ten Cantor Lectures,* and *Total Abstinence;* Eddy's *Alcohol in Society;* Hargreaves's *Our Wasted Resources;* Samson's *The Divine Law as to Wines;* Sikes's *Biblical Reason Why Prohibition Is Wrong; Proceedings of the National Temperance Congress,* 1890; Scomp's *King Alcohol in the Realm of King Cotton.*

TOTEM, n. *tō'tĕm* [corruption of Indian name *dodaim*]: among the Indians of N. America and other barbarous tribes, the name, symbol, or cognizance of a tribe, usually a clan-animal. **To'temism,** n. *-ĭzm,* the system of describing tribes or families by the *totem* or animal whose name and symbol they bear; use of the totem as a clan or tribal symbol. **Totemic,** a. *tō-tĕm'ĭk,* pert. to.—The *Totem* is the animal, vegetable, or thing which is an object of veneration or worship to a barbarous tribe—in a certain sense the *god* of the tribe. From the tribe being commonly named after its T., the word frequently denotes merely the tribal name. Numerous tribes with totems exist in America, Australia, the s. Pacific islands, and central Asia; and there are indications that such tribes were numerous even in Europe among ancient races of the Indo-European stock.

Among the Amer. Indians, the following are totems of tribes existing or known to have existed: the Wolf, Bear, Beaver, Turtle, Deer, Snipe, Heron, Hawk, Crane, Duck, Loon, Turkey, Musk-rat, Sable, Pike, Cat-fish, Sturgeon, Carp, Buffalo, Elk, Reindeer, Eagle, Hare, Rabbit, and Snake; the Reed-grass, Sand, Water, Rock, and Tobacco plant. Among the tribes of native Australians, the totems are similarly selected mostly from the fauna of the country. The totems of the Kirghiz tribes of central Asia all are animals to which (in explanation of their reverence for them) the tribes trace back their descent.

It has been suggested that the explanation of the crests and emblems of the now disrupted tribes and clans of Europe is to be found in the supposition that the creature or thing on the crest was originally the T. of the clan or tribe. On this supposition, the widespread clan Chattan or Cattan, e.g., which is represented in the Scotch Highlands, and can be traced in France, Germany, and Egypt, would be recognized as the *Cat* tribe, the cat having been formerly its T., as it still is its crest or emblem. It has also been suggested that many of the mythical traditions of ancient Greece admit of a reasonable meaning, if we suppose that there were anciently in Greece tribes with *totems*—bull, boar, and lion tribes; snake, ant, and dragon tribes. This suggestion awaits further investigation. As an instance of success in tracing back a T. to ancient times and widely separated countries, it has been noted that there are numerous existing snake-tribes in America and in the South Sea islands; while there is certainly some evidence that the snake was the T. of very many and powerful ancient peoples. Its worship can be traced among Semitic races; there are traces of it in the traditions of the Pelasgi; there are proofs of it among the Celts; and the most magnificent ecclesiastical architecture in the world is that of the Nagas—serpent-worshippers in Cambodia—still standing, and only recently brought to light. The inference may be that, in the period of primitive animal-worship, when the serpent was deemed of so much importance, other animals also had their worshippers; and that snake-tribes were not the only tribes with animal totems in those times, as they certainly are not the only ones among existing primitive peoples. The word *totem*, as was pointed out by Max Müller, exists in no Indian language. In Algonquin, *otem* is the possessive of *ote*, which is preceded by a personal article—thus, *kitotem*, 'thy family mark;' *nindotem*, 'my family mark.'—See recent anthropological literature, including works of Tylor, Lubbock, and Herbert Spencer; also *The Origin of Primitive Superstitions*, by R. M. Dorman (Philadelphia 1881).

T'OTHER, *tŭth'ėr:* contr. of *the other*.

TOTIDEM VERBIS, phrase, *tŏt'ĭ-dĕm vėr'bĭs* [L.]: in so many words; in the very words.

TOTIES QUOTIES, phrase, *tō'tĭ-ēz kwō'tĭ-ēz* [L.]: as often as one, so often the other.

TOTIPALMATÆ, n. plu. *tō'tĭ-păl-mā'tē* [L. *totus*, whole; *palma*, the palm of the hand]: in *zool.*, group of wading birds, of the order *Palmipedes*, having the hallux united to the other toes by a membrane in such a manner that the feet are completely webbed; cormorants, pelicans, gannets, and frigate-birds are of this group. All the T. are marine; they feed on fishes, mollusks, and other marine animals, and are excellent swimmers and divers. Many of them have long wings and are birds of powerful flight.

TOTNES, or **Totness**, *tŏt'nĕs:* municipal borough and market-town of Devonshire, England; pleasantly situated on the slope of a steep hill, on the right bank of the river Dart, about 10 m. from its mouth; on the South Devon railway. It is a place of great antiquity; has an interesting church of the 15th c., and some curious antique houses: the ruined keep of the ancient castle, on the summit of the hill, is said to have been built by Joel de Totneis, a Norman baron, on whom the manor was bestowed at the Conquest, and who founded here also a Cluniac priory. The river Dart is navigable for vessels of 200 tons to the town. Steamers ply during the summer months between T. and Dartmouth.—Pop. (1881) 4,089; (1891) 4,016.

TOTO CŒLO, phrase, *tō'tō sē'lō* [L.]: by the whole width of the heaven; wide as the poles apart.

TOTTEN, *tŏt'ĕn*, JAMES: soldier: 1818, Sep. 11—1871, Oct. 1; b. Pittsburgh, Penn. After graduating at West Point, he served on the frontier and in Fla. He was capt. at the outbreak of the civil war, and was chief of artillery under Gen. Lyon and Gen. Fremont 1861; brig.gen. of Mo. militia 1862; chief of artillery of the dept. of the Missouri 1864. For gallant and meritorious service at the siege of Mobile he was brevetted col. U. S. army, and later was brevetted brig.gen. U. S. army. He was retired 1870, having attained the actual rank of lieut.colonel.

TOTTEN, JOSEPH GILBERT: soldier: 1788, Aug. 23—1864, Apr. 22; b. New Haven, Conn. He graduated at West Point 1805, and was commissioned 2d lieut. of engineers, but resigned 1806, to engage in the survey of the w. territories; he returned to the engineer corps 1806. In the war of 1812 he was chief engineer under Gen. Van Rensselaer, Gen. Dearborn, and Gen. Macomb in succession, earning by his services promotion to the actual rank of capt. and brevet rank of lieut.col. He became col. and chief engineer of the army 1838. In the Mexican war he directed the siege of Vera Cruz, and was brevetted brig.-gen. Thereafter his post was in Washington; but he was a member of the light-house board, and 1859–61 made a reconnaissance of the Pacific coast of the United States. In the war of secession his service was not in the field, but he was promoted brig.gen. 1863, Mar. 3, and brevetted maj.gen. 1864. Apr. 21. He was a charter member of the National Acad. of Sciences.

TOTTER, TOTTERING, TOTTY, TOTTIE: see under TOT.

TOUCAN, n. *tô'kăn* [F. *toucan*: Sp. *tuca*]: a picarian bird of the Linnæan genus *Rhamphastos*, now forming the family *Rhamphastidæ*, of the order *Scansores*, and containing nearly 40 known species, all natives of tropical America, and remarkable for magnitude of the bill. They are divided into two groups, the true Toucans (*Rhamphastos*) and the Aracaris (q.v.) (*Pteroglossus*), of which the latter contains the greater number of species: the former has the largest bill, and the tail is shorter. There is a difference also in the prevalent colors, the aracaris generally exhibiting much green and yellow, while the true toucans have the ground color of the plumage usually black; the throat, breast, and rump often gayly adorned with white, yellow, and red. The colors, however, are not in general finely blended, but in strong contrast. The legs are short; feet have two toes before and two behind. The body is short and thick; the tail is rounded or even, varying in length in the different species from half the length to almost the whole length of the body, and is capable of being turned up over the body in a remarkable manner, which it always is when the bird is at roost. The neck is short and thick; the enormous bill is at the base of the full width and depth of the head, and is in some species more than half the length of the body. It is arched toward the tip, irregularly toothed along the margins of the mandibles, and extremely cellular and light, yet strong in structure. The tongue is very long, narrow, and singularly feathered on each side, the processes which give it this feathered appearance probably adding much to its sensibility as an organ of taste. When a T. takes food between the points of the mandibles, the tongue is immediately applied to it, as if to test or enjoy it, and afterward it is tossed into the throat by a sudden throwing back of the head. Toucans may be described as almost omnivorous; they eat fruits with avidity, and they seize and devour small birds. The powerful bill enables them to kill a small bird by a single squeeze. They make a curious clattering noise with their great mandibles, and emit at times a harsh cry. They live chiefly in small flocks in the depths of S. American forests. They are easily tamed, and endure cold climates. In captivity they readily eat rice, bread, potatoes, eggs, and many other kinds of food. They are remarkable among birds for regurgitation of food, in order to a kind of mastication in the great bill, analogous to rumination in quadrupeds. The colors of the bill are, in most of the species, very brilliant during life, but disappear from stuffed specimens in museums. The largest species, e.g., *Rhamphastos Toco*, are about 2 ft. in length. The *R. Tucanus* is the yellow-breasted T.; the *R. Ariel* is the commonest species.

TOUCH, v. *tŭch* [F. *toucher*, to touch—from OHG. *zucchen;* Ger. *zucken*, to twitch: O. Dut. *tucken*, to touch: It. *toccare;* Sp. *tocar*, to touch]: to come close to or in contact with; to perceive by physical contact; to handle, delineate, or treat slightly; to put the hand, finger, foot, or other part on or against: to play, as a musical instrument: to arrive at; to meddle with; to rub or strike against; to soften; to make an impression on, as the heart; to have an effect on: to be in a state of contact; to take effect: to treat of slightly in a discourse; to relate to; in *OE.*, to infect; to impel forcibly; to test, as gold by a stone: N. the act of touching; the state of being touched; contact of two bodies at the surface; the sense of feeling (see below): that by which anything is examined; the act of putting the hand, finger, or other part on or against: manner or style of manipulation. as in playing on an instrument; a stroke; a single stroke of a pencil upon the picture being painted: slight notice: a small quantity intermixed; a trace: feature; lineament: power of exciting the affections: in *mil.*, the contact of a man in the ranks with the man next to him, to be indicated by touching his elbow: in *OE.*, test; proof; tried qualities; a touchstone. **Touch'ing**, imp.: Adj. affecting; moving; pathetic: N. the act of coming in contact with: Prep. relating to; with respect to. **Touch'ingly**, ad. *-lĭ*. **Touched**, pp. *tŭcht:* Adj. mentally affected. **Touchable**, a. *tŭch'ă-bl*, that may be touched. **Touch'y**, a. *-ĭ*, irritable; peevish; irascible. **Touch'ily**, ad. *-lĭ*. **Touch'iness**, n. *-nĕs*, peevishness; irritability. **Touch and go**, within the smallest possible point of happening; a very narrow escape. **Touch-hole**, the small hole of a cannon or firearm through which fire is communicated to the charge; vent (see Gun). **Touch-needles**, small bars of gold and silver, some pure, and others alloyed with certain proportions of copper, used by assayers for trying gold and silver articles. **Touch-paper**, paper steeped in a solution of saltpetre and dried, which burns slowly, used as a match (see Nitre). **Touch-stone**, Lydian stone or Basanite (q.v.), a variety of flinty slate or bituminous quartz obtained from Lydia, in Asia Minor, so called from its being used to test the purity of gold and silver, the quality being judged of by the color of the streak which it leaves on the stone, as contrasted with the streak of a *touch-needle* or thin bar of metal whose purity is known—hence, a criterion. **Touchwood**, very dry decayed wood, used as tinder; amadou. **To touch at**, to come or go to without staying; to make a call at, as steamers *touch at* certain ports. **To touch on** or **upon**, to treat of; to mention slightly. **To touch up**, to repair; to improve by slight touches. **Touch-me-not**, a plant whose ripe seed-vessel, when irritated or touched, projects the seed to some distance; the *Impatiens noli-me-tangĕrĕ*, ord. *Balsaminăcĕæ:* in *med.*, the malignant disease called lupus

TOUCH: one of the senses—that by which we take cognizance of the palpable properties of bodies. It is used in two applications. In its extended acceptation, it implies, says Dr. Carpenter, 'our consciousness of *all* those sensory impressions which are neither olfactive, visual, auditory, nor gustative; and it is therefore designated as the *general sense*, in contradistinction to those which are considered as *special senses*. In its limited application, on the other hand, it is used to designate that modification of the general sensibility which is restricted to the tegumentary surface, or to some special portion of it, and which serves to excite definite ideas in our minds respecting the form, size, number, configuration, weight, temperature, hardness, softness, etc., of objects brought within its cognizance.' See SENSIBILITY, for touch in its general sense: the sense of T. is here dealt with in its limited application, as exercised by the organs specially adapted for the reception of tactile impressions.

The special organs of T. are the papillæ (see SKIN). These are more elevated and numerous on the palmar surface of the ends of the fingers than on any other part of the skin (though they are larger on the tongue). They have an average length in man of $\frac{1}{100}$ of an inch. Their surface, after the removal of the epidermis, appears, from the investigations of Todd and Bowman, to be composed of the basement membrane of the cutis itself; and their interior is composed of fibrous tissue, vessels, and nerves (see TASTE). In each papilla is a small arterial twig, which, entering at the base, subdivides into capillary vessels, which form loops whose convexity lies in the papillary summit. The vascularity of the papillæ is so great that their presence and relative size may be determined simply by the depth of the color imparted to the skin by a good injection of its vessels. Hence, as a general rule, the vascularity of the integument is proportioned to its perfection as an organ of T. The mode in which the nerves terminate is still in question. According to Todd and Bowman, it is often impossible to detect any nerves at all within the papillæ, though nerves were plainly visible at their base; and they incline to the belief that the nervous tubules either entirely or in great measure lose the white substance when within the papillæ.

In the lower animals, as in man, the papillæ are developed especially in those parts of the outer surface especially endowed with tactile sensibility. For the following illustrations of this statement, drawn from comparative anatomy, we are indebted to Dr. Carpenter: 'In the quadrumana generally, both the hands and feet are thickly set with papillæ; and in those which have a prehensile tail the surface of this organ possesses them in abundance. In the carnivorous and herbivorous mammalia, whose extremities are furnished with claws or incased in hoofs, we find the lips and the parts surrounding the nostrils to be the chief seat of tactile sensibility, and to be copiously furnished with papillæ; this is especially the case with those which have the lips or nostrils prolonged into a snout or proboscis—as in the pig, the rhinoceros, the tapir, and the elephant. In the mole, too, the papillary structure is remarkably developed at the extremity of the snout. The only part of the skin of birds on which tactile papillæ have been discovered is on the under surface of the toes and on the web of the palmipedes where they obviously receive impressions which guide the prehensile and other movements of the feet. In many lizards a papillary structure is found on the under surface of the toes, and in the chameleon it exists also on the integument of its prehensile tail. . . . In serpents and chelonians (tortoises) no papillary apparatus has as yet been detected; and in fishes and invertebrata its presence has not been ascertained, although it would appear that certain parts, especially the tentacles around the mouth, are endowed with a high degree of tactile sensibility.' It is probable that in all animals which have a soft fleshy tongue furnished with papillæ this organ is an instrument of tactile sensibility as well as the organ of taste. Besides the papillary apparatus, certain animals have special organs of T., constructed on a totally different plan, and consisting of a rod or filament in itself insensible, but connected at its base with nervous fibres in such a manner that any motion or vibration communicated to it must be transmitted to them. The so-called 'whiskers' of the cats and certain rodents, as the hare and rabbit, belong to this class; and it has been proved, experimentally, that if they be cut off the animal loses, to a great extent, its power of guiding its movements in the dark.

Among the conditions necessary for exercise of the sense of T. are: (1) normal condition of the papillary apparatus and of the nerves supplying it; (2) due supply of blood to the tactile organs; (3), as noticed in the article Taste, a temperature not too far removed from the natural heat of the body. It has been shown by Prof. Weber that if the fingers or the lips be immersed for half a minute or a minute in water heated to 125°, or cooled to 32°, the power of distinguishing between a hot or cold fluid or solid body is for the time completely lost, a feeling of pain alone being experienced. The result is the same on applying cold to the trunk of a nerve—the ulnar nerve at the elbow, where it lies just beneath the skin, being selected for the experiment. The fingers supplied by this nerve soon lost the power of distinguishing between heat and cold, and could only imperfectly perceive the contact and pressure of bodies.

Prof. Weber has made many experiments on the general subject of T.: for his investigations regarding the tactile discrimination in different parts of the skin, see Sensibility. Prof. Valentin, whose results on the whole correspond closely with those of Weber, found, however, a considerable extent of individual variation, some persons being able to distinguish the separated compass-points at half or even one-third of the distances required by others.

There is no sense so capable of improvement as that of T.: of this power of improving the delicacy of T., says

Dr. Carpenter, 'we have examples in the case of certain artisans, whose employments require them to cultivate their tactile discrimination: thus, the female silk-throwsters of Bengal are said to be able to distinguish by the T. alone *twenty* different degrees of fineness in the unwound cocoons, which are sorted accordingly; and the Indian muslin-weaver contrives by the delicacy of his T. to make the finest cambric in a loom of such simple construction that European fingers could at best propose to make a piece of canvas at it.' The highest degree of tactile sensibility is found in blind persons—a fact due mostly to concentration of the attention and of the powers of recollection and comparison, and due probably to some extent to an increased development of the tactile organs themselves, resulting from that augmented nutrition which would be the natural consequence of the frequent use of them, and of the increased flow of blood that seems to take place toward any part on which the attention is constantly fixed.—For interesting information on this subject, see Dr. Kitto's *Lost Senses*, in which are given cases, apparently authentic, of blind persons being able to distinguish colors by the touch.

TOUGH, a. *tŭf* [AS. *tóh;* Low Ger. *tage;* Dut. *taai;* Ger. *zähe*, tough: Low Ger. *tögen;* Ger. *ziehen*, to pull, to draw: Gael. *tiugh*, thick, close]: admitting of bending and pulling without fracture or injury; having the property of flexibility without brittleness; flexible; not easily.broken or separated; able to endure hardships; tenacious; viscous; difficult, as a *tough* piece of business; not easily masticated, as meat. **TOUGH'LY**, ad. *-lĭ*. **TOUGH'NESS**, n. *-nĕs*, the quality of a substance which renders it in some degree flexible and without much liability to fracture; tenacity; clamminess; viscosity. **TOUGH'ISH**, a. *-ĭsh*, rather tough. **TOUGHEN**, v. *tŭf'n*, to make tough; to grow tough. **TOUGHENING**, imp. *tŭf'nĭng*. **TOUGHENED**, pp. *tŭf'nd*. **TOUGH'ENED** or **TEMPERED GLASS**, glass made tough or less brittle, by being first heated, and then plunged into a hot bath of oleaginous or alkaline compounds.

TOUL, *tôl:* fortified town of France, dept. of Meurthe-et-Moselle; about 200 m. e. of Paris by railway. This fortress surrendered to the Germans 1870, Sep. 23, after bombardment of three days. It has an old cathedral, built through five centuries (965–1496), now the church of St. Étienne and in parts recently restored, and reckoned one of the most splendid in France. Cotton, woolen, lace, and faience manufactures are carried on.—Pop. (1881) 9,981.

TOULA, or **TULA**, *tô'lâ:* government in Great Russia, bounded n. by the govt. of Moscow; 11,909 sq. m. The surface is mostly level; climate temperate; soil fertile. The Oka is its navigable river; other streams are tributaries either of the Oka or the Don. The surface is in general dry, there being no lakes or marsh-lands, and forests are rare. The inhabitants are occupied chiefly in agriculture, cattle-breeding, manufacture of pottery, fishing, and working of iron mines.—Pop. (1880) 1,279,715; (1886) 1,464,101.

TOU'LA, or **Tu'la**: important manufacturing town of Great Russia, cap. of the govt. of T.; on the Upa, affluent of the Oka, 110 m. s. of Moscow. Its 28 churches, its arsenal, theatre, industrial museum, cathedral, and the ancient Kreml are the principal buildings. T. is an ancient town, and has suffered severely from Tartar invasion and during the wars early in the 17th c. Iron-works founded here under Czar Alexis Michailovitch have acquired high reputation. The Russian army is supplied with muskets and small-arms largely from the works here. Cutlery, locks, tea-urns, and bells are made in great perfection; and bristles are prepared in large quantities for home consumption and export.—Pop. (1885) 63,928.

TOULMIN, *tôl'min*, **Joshua**, D.D.: Unitarian minister, and author: 1740, May 11—1815, July 23; b. London. He was pastor of a dissenting congregation for a time, then of a Bapt. congregation, being at the same time bookseller; later he adopted Unitarianism, and became minister of the church in Birmingham once served by Dr. Joseph Priestley. The degree D.D. was conferred by Harvard Coll. He was author of numerous works, among them *Memoirs of Socinus; Internal Evidences of Christianity; Biographical Tribute to the Memory of Dr. Priestley.*

TOULON, *tô-lông'*: great seaport and naval arsenal of France, and fortress of the first class, in the dept. of Var; on the shore of the Mediterranean, 42 m. e.s.e. of Marseille by railway. It stands at the head of a deeply penetrating inlet or gulf; rises in the form of an amphitheatre toward the n., where its ramparts extend to the foot of a chain of lofty elevations, in part clothed with beautiful forests. The port is divided into two parts, the old and the new—the old, on the e., appropriated to merchant-vessels, and bordered by a quay; the new, on the w., surrounded by the dock-yard, slips, arsenal, store-houses, cannon foundry, etc. Numerous forts defend the town on the land-side; and the mouth of the harbor, and the hills commanding it, are studded with forts and redoubts; while moles, hollow and bomb-proof, and formed externally into batteries, level with the water's edge, separate the roadstead from the old and new ports. Belonging to the arsenal, perhaps the finest in France, the chief objects of attraction are the sail-yard, the armory, the museum, the magazine, and the basin for repair of ships. The fortifications have been greatly extended since the conquest of Algeria, T. having become the chief port of communication with Africa. The population has also greatly increased, and two new suburbs have been constructed. The town is surrounded by a double rampart and by a wide and deep fosse, new defense-works having been added since 1880. The sanitary arrangements of T. are very defective: and cholera appeared here in a virulent form 1884. The industry and manufactures of T. depend mainly on the arsenal.—Pop. (1886) 53,941, besides 12,487 soldiers, sailors, etc; (1891) 77,747.

T. was destroyed by the Saracens 889, and again by the Saracens about the close of the 12th c. At the end of the

16th c. T. became important as a naval and military stronghold. It was taken by the British and Spaniards 1793; but the allies had to evacuate the town in Dec. of the same year, after being fiercely attacked by the republicans, whose guns were commanded by Napoleon—then a mere officer of artillery—who here evinced for the first time his genius and self-reliance.

TOULOUSE, *tô-lôz'* (anc *Tolosa*): important city in s. France, cap. of the dept. of Haute-Garonne; in a broad and pleasant plain, on the right bank of the river Garonne, 160 m. by railway s.e. of Bordeaux, 478 m. s. of Paris.—Pop. (1881) 127,196; (1886) 133,775; (1891) 149,791.—The *Canal du Midi* sweeps round the e. and n. sides. The Garonne is here crossed by a beautiful bridge, more than 810 ft. in length, and 72 broad, which connects T. with the suburb St. Cyprien. The city, except the s. faubourg, is not particularly handsome (though the broad quays have an imposing appearance); and there are few fine public buildings. Notable, however, is the cathedral, containing the tombs of the counts of Toulouse; the *Capitole*, or town-hall; the church of St. Sernin (1090); the Musée, with its interesting collection of antiquities, forming an almost uninterrupted chain in the history of art, from the Gallo-Roman to the Renaissance period. T. is the seat of an abp., has a univ.-academy, an acad. of 'floral games' (*Société des Jeux Floraux*), claiming origin from the contests of the ancient troubadours, academies of arts, sciences, antiquities, etc., schools of law and medicine and artillery, a national college, an observatory, a museum, a botanic garden, and a public library of 50,000 vols. There are manufactures of woolens, silks, leather, cannon, steam-engines, tobacco, brandy, etc., and a great trade with Spain. Its duck-liver and truffle pies are famed throughout s. France.

History.—*Tolosa* was, in Cæsar's time, a city within the limits of the Roman *Provincia*, and had been originally the cap. of the Volcæ Tectosages, Gallic tribe noted for wealth and consequence. Under the empire its importance continued. Ausonius describes it as surrounded by a brick wall of great circuit, and so populous that it had founded four colonies. In 412, the Visigoths made it cap. of their kingdom; and after the time of Charlemagne it was under the sway of counts, who made themselves independent about 920; but 1271 the 'county of T.' was reunited to the crown of France by Philippe *le Hardi*. Its literary celebrity reaches back to the Roman empire. Ausonius speaks of the *toga docta* of 'Palladian' Tolosa; and the favorite deities of the city were Jupiter, Minerva, and Apollo. At a little village near, still bearing the name *Viel Toulouse*, a multitude of cinerary urns, statuettes, Phœnician, Celtiberian, Gallic, Greek, and Roman medals, fragments of buildings, and an entire paved street have been discovered. Early in the middle ages, under the counts of T., the city became a seat of Provençal poetry, and was the centre of the papal crusade against the Albigenses, conducted by Simon de Montfort. The parliament of T. had great reputation, but unhappily is memorable most for one of its most iniquitous decisions—in the case of the Calas (q.v.) family.

TOUPEE, n. *tû-pā'* [F. *toupet*, a toupee, a dim. of OF. *toupe;* Ger. *zopf*, a tuft (see Top 1)]: a kind of peruke; an artificial lock of hair; a curl.

TOUR, n. *tôr* [F. *tour;* It. *torno*, a turn: F. *tourner*, to turn (see Turn): comp. Gael. *turus*, a journey, a voyage]: *literally*, a going round—hence, a lengthy excursion; a ramble; a roving journey; in *OE.*, a turn or revolution; in *Milton*, for Tower; elevation; high flight: V. to go on or make a tour. **Tour'ist**, n. *-ist*, one who performs for pleasure a lengthy journey or excursion. **Tour of duty**, in *mil.*, the turn to go on duty.—Syn. of 'tour, n.': jaunt; journey; pilgrimage; excursion; round; trip; ramble; circuit.

TOURAINE, *tô-rān':* one of the former provinces of France, whose cap. was Tours (q.v.); bounded n. by the province of Orleannais, e. by Berri, s. by Poitou, w. by Anjou. It was about 60 m. in length, and nearly 60 m. in breadth; and it appears on the map now as the dept. of Indre-et-Loire (q.v.).

TOURBILLION, n. *tôr-bĭl'yŭn* [F. *tourbillon*, a whirlwind—from L. *turbo*, *turbinus*, a whirlwind, a whirlpool]: a fire-work so arranged as to rotate in the air, giving the appearance of a scroll of fire.

TOURCOING, *tôr-kwâng':* frontier-town of France, dept. of Nord; 7 m. n.e. of Lille; on an eminence in a fertile district. It has great reputation for manufacture of linen-cloths; also carries on sugar-refining, distilling, and manufactures of soap, colors, etc. It is rapidly becoming one with the adjoining town Roubaix (q.v.).—Pop. (1881) 34,415; (1886) 41,570; (1891) 65,477.

TOURELLE, n. *tô-rĕl'* [F. dim. of *tour*, a tower]: small tower attached to a castle or mansion, and usually containing a winding stair.

TOURGEE, *tôr-zhā'*, Albion Winegar; author: b. Williamsfield, O., 1838, May 2. He studied at Rochester Univ. 1859–61; served throughout the war as a soldier; was wounded in two battles, and was prisoner of war four months. After the war he settled in Greensboro, N. C., and was active in politics as a radical republican. He was member of the N. C. constitutional conventions 1868 and 75, and held the office of judge 1868–74. He published a newspaper in Greensboro 1866–7, and in Philadelphia and New York *Our Continent* 1882–85. He has made frequent tours of lecturing, and is author of four works relating to N. C. law, and of several novels and political and reformatory manifestoes, some of which have had very wide circulation. Of *A Fool's Errand* nearly 150,000 copies were sold. Similar works by T. are *Bricks without Straw; Hot Plowshares; An Appeal to Cæsar*.

TOURGOUENIEFF', Ivan Serjevich: see Turgenef.

TOURMALINE, n. *tôr'mă-lĭn* [from *tournamal*, its name in Ceylon]: aluminous mineral occurring in primitive rocks in many parts of the world, in long prismatic crystals, most frequently black, but found of various colors, and ranked among Gems (q.v.); schorl. Its chemical composition is very complex and somewhat various, but the chief constituents are always silica and alumina in about equal proportions, and forming about three-fourths of the whole; the remainder consisting of boracic acid, fluorine, phosphoric acid, peroxide of iron, peroxide of manganese, protoxide of iron, magnesia, lime, soda, potash, and lithia—not, however, all present in any specimen. T. is harder than quartz, but not so hard as topaz or emerald. Its specific gravity is a little more than 3. It occurs in crystals, or massive and dispersed, though always crystalline. Its lustre is vitreous. Some varieties are transparent, some translucent, some opaque. Some are colorless, some green, brown, red, blue, and black. Red T. is known as *Rubellite;* Blue T. as *Indicollite;* Black T. as *Schorl:* the black is the most common. T. crystallizes in prisms, with 8, 4, or 9 sides, variously acuminated. The sides of the prisms are striated. The finest tourmalines are much valued by jewellers, but are comparatively rare. They mostly come from Ceylon, Siberia, and Brazil. Tourmaline of gem value has been found at Paris, Maine.

TOURNAMENT, n. *tôr'nă-mĕnt* [OF. *tornoiement*, a tournament—from *tournoier*, to joust; *torner*, to turn (see TURN): It. *torneamento*, a tournament; *torneare*, to surround, to tilt]: a mock fight by knights on horseback; a martial sport of the middle ages for exhibiting prowess and skill in arms; in *OE.*, encounter; shock of battle: in modern usage, any contest of skill in which a number of persons take part, e.g., a chess *tournament*. **TOUR'NEY**, v. *-nĭ*, to perform at tournaments; to tilt in the lists: N. a tournament. **TOUR'NEYING**, imp. **TOUR'NEYED**, pp. *-nĭd*.

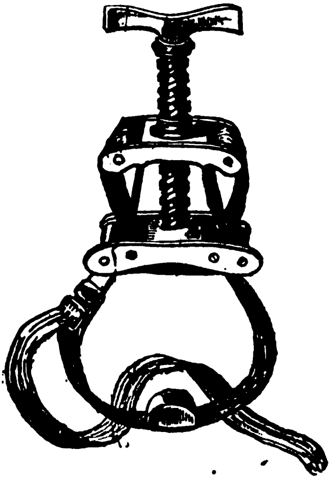
TOUR'NAMENT: military sport of the middle ages, in which combatants engaged one another with the object of exhibiting their courage, prowess, and skill in the use of arms. The invention of the T. has been ascribed by some writers to Geoffroy de Prenilly (10th c.), ancestor of the Counts of Anjou. France was its earliest scene, whence it spread first to Germany, then to England early in the 12th c., afterward to s. Europe. A T. was held usually on invitation of some prince, who sent a king-of-arms or herald through his own dominions and to foreign courts, signifying his intention of holding a T. and a clashing of swords in presence of ladies and damsels. The intending combatants hung up their armorial shields on the trees, tents, and pavilions round the arena, for inspection, to show that they were worthy candidates for the honor of contending in the lists, in respect of noble birth, military prowess, and unspotted character. The combat took place on horseback, at least was always begun on horseback, though the combatants who had been dismounted frequently continued it on foot. The usual arms were blunted lances or swords; but the ordinary arms of warfare, called arms *à l'outrance*, were used sometimes by cavaliers solicitous of special distinction. Tournaments were under minute regulations, which in some degree diminished their danger. The prize was bestowed by the lady of the T. on the knight to whom it had been adjudged, he reverently approaching her, and saluting her and her two attendants. The period when tournaments were most in vogue comprised the 12th, 13th, and 14th c.; and the place where the most celebrated English tournaments were held was the tilt-yard near St. James's, Smithfield, London. The church at first discountenanced tournaments, some of its decrees prohibiting persons from engaging in them under pain of excommunication, and denying Christian burial to a combatant who lost his life in one; but the church seems to have looked with more favor on these combats after the middle of the 13th c. During the 15th and 16th c. tournaments continued, but the change in the social life and warfare of Europe had changed their character, and they became state pageants rather than real combats. The death of Henry II. of France, 1559, consequent on the loss of his eye at a T., led to their general abandonment in France and elsewhere, and there have been few attempts to revive them even as mere spectacles. A magnificent entertainment consisting of a representation of the old T. was given at Eglinton Castle, England, 1839, by the Earl of Eglinton: Lady Seymour was the Queen of Beauty, and many of the visitors enacted the part of ancient knights; among them Prince Louis Bonaparte, afterward Napoleon III.—According to Ducange, the difference between a T. and a JOUST, is that the joust is a single combat, while in the T. a troop of combatants encounter one another on either side; but this distinction has not been always observed.

Armor for Tournament, 1490.

TOURNAY, *tŏr-nā'* (Flemish, *Doornik*): fortified town of Belgium, province of Hainault; on both sides of the Scheldt, near the French frontier. It has a splendid cathedral with five towers (and pictures by Jordaens, Rubens, Gallait, etc.), several fine churches, particularly St. Quentin and St. Jacques, a gallery of art, an episcopal seminary, five hospitals, and a lunatic asylum. Although one of the oldest towns in Belgium, T. has a modern appearance, with fine suburbs and beautiful broad streets. The chief manufactures are hosiery, linen, carpets, and porcelain; but there are few large work-shops, most of the fabrics being executed by the people in their own houses. A little to the s.e. is the famous village of Fontenoy (q.v.).—Pop. of T. (1880) 32.566; (1891) 35.408.

T., anc. *Tornacum* or *Turris Nerviorum* ('Fort of the Nervii'), was in the 5th and beginning of the 6th c. the seat of the Merovingian kings. It subsequently belonged to France, but at the peace of Madrid was included in the Spanish Netherlands. Afterward it was more than once taken by France, but again restored by treaty. 1794, May, it was the scene of several hotly contested fights between the French and Austro-English armies, the most important of which was that of May 19, in which Pichegru defeated the Duke of York.

TOURNEFORT, *tór-nĕh-for′*, JOSEPH PITTON DE: botanist: 1656–1708, Dec. 28; b. Aix, in Provence. From youth, through his whole life, he was an ardent botanist. He became prof. of botany at the Jardin des Plantes 1683; and was sent, at the king's expense, to Spain, Portugal, England, and Holland, and to the East. He added a great number of species to the list of known plants. He died in Paris. He published several botanical works—the chief being *Institutiones Rei Herbariæ* (3 vols. Paris 1700). His botanical system maintained its ground till the time of Linnæus; and was of great service by its grouping of plants in genera. Previous botanists had described them individually, as species.



Common Tourniquet.

TOURNIQUET, n. *tór′nĭ-kĕt* [F. *tourniquet*, a turnstile, tourniquet—from *tourner*, to turn]: in *surgery*, instrument for compressing the main artery of the thigh or arm, either to prevent too great loss of blood in amputation, or to check dangerous hemorrhage from accidental wounds, or to stop the circulation through an aneurism.

The common T. consists of three parts—(1) a pad to compress the artery; (2) a strong band, buckled round the limb; (3) a bridge-like contrivance over which the band passes, with a screw whose action raises the bridge and consequently tightens the band. The best kind of pad is a small firm roller about an inch thick; it must be placed lengthways over the main artery so as to compress it against the bone, and must be secured in its place by a turn of bandage, over which the band of the T. must be applied. This band must first be tightly buckled, and the pressure must be then increased to the necessary extent (namely, till the beating of the artery beyond the instrument ceases to be perceptible) by the action of the screw, which should always be opposite the buckle of the band. As the instrument arrests the venous blood, it should never be applied tightly in cases of amputation until the surgeon is ready to make his incision, as otherwise there would be excessive loss of venous blood.

The invention of the T. is ascribed usually to the French surgeon Morel, who, 1674, used a stick passed beneath a fillet and turned round so as to twist it up to the requisite degree of tightness for preventing flow of blood—a rude form of T. which may be extemporized in emergency.

TOURO, *tô'ro*, JUDAH: philanthropist: 1775, June 16—1854, Jan. 18: b. Newport, R. I., where his father was minister of the synagogue. He began his business life in Boston; sailed as supercargo of a ship belonging to an uncle, and showed courage and skill in a conflict with a French privateer in the Mediterranean 1798; settled in New Orleans as merchant 1802; was a volunteer private soldier in the battle of New Orleans, and was severely wounded by a cannon-ball. He acquired a large fortune; and to Rezin David Shepherd, whose bravery and care had saved his life in battle, T. bequeathed a large share of his estate. He founded an almshouse in New Orleans, and liberally aided many charities, Hebrew and Christian. He gave $10,000 toward building Bunker Hill monument. He died in New Orleans; and was buried in the Jewish cemetery, Newport, R. I.

TOUROUKCHANSK, *tô-rô-chânsk':* small town of e. Siberia, govt. of Yeneseisk; on the Yenesei, 4,122 m. e. of St. Petersburg, and only 50 m. s. of the Arctic circle. The people trade in furs.—Pop. 300.

TOURS, *tôr:* city of France, cap. of the dept. of Indre-et-Loire, formerly cap. of Touraine (q.v.); in a fertile valley, 146 m. by railway s.w. of Paris. Along its n. side flows the Loire, and along its s. side the Cher—these two rivers uniting about 25 m. s.w. of the city, between which and their point of confluence only a very narrow strip of land separates them. The bridge over the Loire, which continues the great highway from Paris s. to Bordeaux, is more than 1,400 ft. long. The cathedral is a stately Gothic edifice. Surrounding the choir—begun 1170—is beautiful old painted glass. The Tour de St. Martin or d'Horloge, and the Tour de Charlemagne, are noteworthy as the only remains of the cathedral founded by St. Martin, 4th c.

The church was pillaged by the Huguenots, and utterly destroyed (except the two towers mentioned) at the Revolution. T. has a town-hall and a museum. A little w. of T. are the remains of Plessis les Tours, in which Louis XI. died 1483. Manufactures of silk stuffs, carpets, painted glass, and pottery are carried on.—Pop. (1881) 52,209; (1886) 59,585; (1891) 60,335.

T., anc. *Cæsarodunum*, dates from the time of the Gauls, and was visited by Cæsar and by Adrian. Here Clovis, having come to thank St. Martin for the victory of Vouillé, received the crown of gold and the purple robe presented to him by Emperor Anastasius. Henry IV. planted here the first mulberry-trees known in France, and here the first silk factories were established. Under Richelieu, 40,000 hands were employed at T. in this manufacture; but the industry of the town was ruined by the revocation of the Edict of Nantes. In the Franco-German war of 1870–1, T. was for a time the seat of the French provisional govt., and later was occupied by the German troops.

TOURVILLE, *tôr-vēl'*, **Anne Hilarion de Cotentin, Count de**: 1642–1701, May 28; b. Tourville, France; third son of César de Cotentin, Seigneur de T. He entered the French navy at the age of 18, and was conspicuous for bravery against the Turks and Algerians. He distinguished himself 1671–2 in the naval war waged by the combined fleets of France and England against the Dutch. In 1682 he was made lieut.gen. of the navy. In the war after the English revolution of 1688, between France on the one part and England and Holland on the other, T. was put at the head of the French navy; and 1690, June, he entered the English Channel at the head of a powerful fleet, and inflicted a disastrous and memorable defeat on the united English and Dutch armament near Beachy Head. 1692, May 19–24, T., with a great French fleet, met the combined English and Dutch fleets off Cape La Hogue, in one of the greatest naval battles of modern times. The five days' battle ended in the complete defeat of the French, 16 of their men-of-war being utterly destroyed. In 1693 T. was made a marshal of France. He died at Paris.—T., always personally brave, was in his early career a timid commander where his professional repute was at stake; but under the censures which his caution drew on him he became bold even to rashness.

TOUSE, v. *towz*, or **Tousle**, v. *towz'l* [Low Ger. *tuseln;* Ger. *zausen*, to pull the hair about: AS. *tæsan;* O.Dut. *teesen;* Dan. *tæse*, to tease wool—*lit.*, to pull to pieces]: to card or dress wool by pulling it to pieces, which are laid together again a number of times; to pull about; to drag; to tumble; to rumple; to dishevel. **Tous'ing**, imp. **Toused**, pp. *towzd*. **Tous'er**, n. *-ėr*, one who touses.

TOUS-LES-MOIS, *tô-lā-mwâ':* a starch made in the W. Indies, from the roots of a species of canna (see **Indian Shot**); used as substitute for arrow-root.

TOUSSAINT, *tô-sâng'*, **ANNA LOUISA GERTRUDE**: popular Dutch novelist: 1812, Sep. 16—1886, Apr.; b. Alkmaar; of Huguenot extraction. Her first work, *Almagro* (1837), was well received, and translated into German. It was followed by other works; and 1840 by *Huis Lauernessé*, a story of the Reformation (several editions, and German and English transl.). Her popularity was increased by a series of novels in 10 vols. 1845–55, under the titles *De Graaf van Leycester in Nederland* (The Earl of Leicester in the Netherlands), *De Vrouwen van het Leycestersche tijdperk* (The Women of the Times of Leicester), and *Gideon Florentz.* Her other works are numerous. Her writings are characterized by historical accuracy.—In 1851 she married Johannes Bosboom, distinguished painter, and resided at the Hague till her death.—At the Paris exhibition 1855 her husband received the gold medal for paintings of churches.

TOUSSAINT LOUVERTURE, *lô-vĕr-tür'*, **PIERRE-DOMINIQUE** (original name, **BREDA**): 1746, May 20—1803, Apr. 27; b. Breda, San Domingo: one of the liberators of Hayti (q.v.). His father and mother were both African slaves—his father claiming descent from an African chief. When the French Revolution broke out, it found T. L. in the position of coachman, and a sort of sub-manager of an estate. He early showed unusual abilities, and obtained a good education—acquiring also some knowledge of surgery and medicine. In 1791 the French convention passed the memorable decree by which the rights of French citizens were given to people of color. In the revolutionary strife which followed in San Domingo, T. was, for the next three years, conspicuous for his adherence to the cause of royalty and Rom. Catholicism; but the decree of 1794, Feb. 4, declaring all slaves free, won him to the side of the French republic. He joined their commander, Laveaux, by whom he was made a gen. of division. In 1793, in the midst of the troubles, the British landed a force and took partial possession of the island. Against them T. L. proved himself an able and indefatigable enemy, bringing the whole n. division of the island under the dominion of the French republic. As a military commander he showed decided genius: his name Louverture was given him because of his prowess in *opening* gaps in the ranks of the enemy. In 1795, in consequence of a conspiracy of three mulatto generals, Laveaux was arrested at Cape Town; but T., assembling his negroes and joining the French force, quickly effected the release of the governor. The gratitude of Laveaux was very great; and 1796 the commissioners of the directory appointed T. chief of the army of San Domingo. Shortly afterward Gen. Maitland, Brit. commander, surrendered to T. L. all the strong places which he had hitherto held in the island. This was followed 1801 by the submission of the Spanish forts. The whole of San Domingo was then under the rule of T. L. His sway was vigorous and upright; and the agriculture and trade of the island flourished under him. He was now at the summit of his prosperity, and assumed great state, though retaining habits of personal simplicity. But a more powerful ruler now found himself at leisure to interfere in the affairs of Hayti. During the peace of Amiens, Napoleon Bonaparte issued a proclamation re-establishing slavery in San Domingo. This was met by a counter-proclamation by T. L., issued 1801, Dec. 18, in which, while professing obedience, he showed plainly that he meant resistance. A squadron of 54 sail of the line, under Gen. Le Clerc, soon made its appearance to enforce the edict of the first consul. T. was compelled to retire, was proclaimed an outlaw, and, agreeing to surrender, was received with military honors. He was afterward treacherously arrested, and sent to Paris, and after ten months' rigorous imprisonment, died in the prison of Joux, near Besançon.—See *Vie de Toussaint l'Ouverture*, by St. Remy (Par. 1850); *The Life of T.*, by Dr. Beard (Lond. 1853); Charles Sumner's *Toussaint Louverture*.

TOUT, v. *towt* [Icel. *tota*, a snout; *túta*, anything sticking out: Sw. *tut*, a point, a muzzle]: to look; to peep; to look out for custom: N. one who watches race-horses in the course of training to secure information for betting; a touter. Tout'ing, imp.: N. the act or practice of looking out for customers by means of paid agents. Tout'ed, pp. Tout'er, n. *-ér*, one who hangs about places frequented by tourists, to offer his services, or to secure their custom for a particular inn, conveyance, etc.

TOUT ENSEMBLE, n. *tôt âng-sâng'bl* [F., all together]: the whole of anything taken together; anything regarded as a whole without regard to distinction of parts; specifically, in the fine arts, the general effect of a work of art without regard to execution of details.

TOW, n. *tō* [Fris. *touw*, tow: Icel. *tog*, the long hairs or coarse shaggy part of the fleece; *tó*, a tuft of wool for spinning (see also Tow 2)]: the coarser part of flax or hemp separated from the finer part by the hackle or swingle.

TOW, v. *tō* [F. *touer*, to tow a vessel by a rope: Dut. *toghen;* Icel. *toga*, to pull, to drag: Icel. *tog;* Dan. *toug*, a cable: AS. *teon*, to draw]: to drag, as a boat or ship, through the water by means of a rope. Tow'ing, imp.: N. the act of drawing through water by means of a rope. Towed, pp. *tōd*. Towing-boat, a boat that tows; a tug-boat. Tow-line, or Tow-rope, a rope or cable used in towing or dragging a vessel through the water. Tow-path, or Towing-path, the roadway on the banks of a canal for men or horses that tow. Towage, n. *tō'āj*, the act of towing; the price paid for towing.

TOWANDA, *to-wân'da:* borough, cap. of Bradford co., Penn.; on the Susquehanna river, and on the Barclay, the Lehigh Valley, and the State Line railroads; 37 m. s.e. of Elmira, 85 m. w.n.w. of Scranton. It contains 8 churches, court-house, graded public schools, public library, Susquehanna Collegiate Institute, opera-house, 2 national banks (cap. $275,000); and 1 daily, 4 weekly, and 1 monthly periodicals. The industries comprise planing, saw, and flour mills, nail, furniture, toy, and piano and organ factories, brewery and agricultural-implement works.—Pop. (1880) 3,814; (1890) 4,165.

TOWARD, prep. *tō'ĕrd*, or To'WARDS, *-ĕrds* [AS. *to-weardes*—from *to*, to and *weard*, direction]: in the direction of; with a tendency to; with respect to; regarding: AD. nearly; near at hand. To'WARD, a. ready to do or learn; docile; in *OE.*, rash; bold. To'WARDLY, ad. *-lĭ*. To'WARDNESS, n. *-nĕs*, or To'WARDLINESS, n. *-lĭ-nĕs*, readiness to do or learn; docility; aptness.

TOWEL, n. *tow'ĕl* [F. *touaille;* OHG. *twahilla*, a towel: It. *tovaglia*, a table-cloth: Goth. *thwahan;* AS. *thwean*, to wash]: a cloth for wiping the face, hands, or person, especially after washing; a cloth used for wiping dishes or the like after being washed; an altar-cloth. TOW'ELLING, n. cloth for towels.

TOW'EL GOURD, or LOOFAH, *lŏf'ah* (*Luffa ægyptiaca*): species of cucurbitaceous plant, cultivated in Egypt, Arabia, India, China, etc., and in the s. United States. It is a climbing vine, remarkable chiefly for its ovate, fleshy fruit, somewhat like a cucumber, which varies from 6 in. to 2 ft. in length. The close vascular network of the interior of the fruit, when freed from interstitial matter and seeds, constitutes the *loofah* or T. G. of commerce. It has long been used for scrubbing-brushes, flesh-brushes, and strainers. From the fibre are made in-soles for shoes, saddle under-cloths, surgical bandage stuffs, etc.

TOWER, n. *tow'r* [W. *twr*, a tower, a heap or pile: F. *tour;* L. *turris*, a tower: Gael. *tùr*, a tower]: a lofty building, of any form in plan, consisting of many stories, or high in proportion to its lateral dimensions; a part of a building rising high above the main edifice; a movable wooden edifice mounted on wheels, used in ancient warfare to attack a besieged town or fortress; in *OE.*, high flight; elevation: V. to be lofty; to rise above; to rise and fly high; to soar. TOW'ERING, imp.: ADJ. very high; elevated; soaring. TOWERED, pp. *tow'rd:* ADJ. having towers; adorned or defended by towers. TOWERY, a. *tow'-r'ĭ*, adorned or guarded with towers; lofty. TOWER-MUSTARD, n. *tow'r-mŭs'tĕrd*, a hardy annual plant whose foliage is so disposed on the stem as to give it a pyramidal appearance; the *Arăbĭs turrīta*, ord. *Crucifĕræ*.

TOW'ER: town in St. Louis co., Minn.; on Vermilion Lake, and on the Duluth and Iron Range railroad; 96 m. n. of Duluth. It is in an exceptionally rich iron and timber region; was incorporated 1884, and has all the advantages of a successful, thriving town. One of its mines is said to be the largest, and to produce the most ore containing the highest per cent. of metallic iron, of any mine in the world; and a few m. n. of the town is an invaluable tract of the best quality of Norway and white pine.—T. has 5 churches, 2 graded schools, 1 national bank (cap. $50,000), 1 weekly newspaper, and several important manufacturing establishments.—Pop. (1890) 5,980.

TOWER, *tow'*· Zealous Bates: soldier: b Cohasset, Mass., 1819, Jan. 12. He graduated at West Point 1841, first in a class of 52, and was commissioned 2d lieut. of engineers and asst. prof. of engineering at the Milit. Acad. He served with distinction through the Mexican war; superintended important military and public works 1848–61; became maj. of engineers 1861, Aug. 6, and was chief engineer in the defense of Ft. Pickens. As brig. gen. of vols. he served in n. Va. under Banks and Pope, and was severely wounded at the second Bull Run battle, 1862, Aug. 30; returning to duty in the field 1864, Sep., he served in the milit. divisions of the Mississippi and Tennessee till the end of the war. He was retired as col. 1874, and brevet maj. general.

TOW'ER HAM'LETS: English parliamentary borough in Middlesex, in the e. of London, and having the City and Finsbury w. of it. Till 1885 it sent two members to parliament; since then it falls into seven electoral districts, each returning one member. The divisions are those of Whitechapel, St. George's-in-the-East, Limehouse, Mile-End, Stepney, Bow and Bromley, and Poplar. In T. H. are the Tower of London, Mint, Trinity House, and many of the principal docks.—Pop. of borough (1891) 444,000.

TOWER OF LONDON: in feudal days, a powerful fortress; then, and long afterward, a state prison of gloomy memories; now a government store-house and armory, and still, in some sense, a stronghold: an irregular quadrilateral collection of buildings on rising ground adjoining the Thames, and immediately e. of the City of London. The space occupied is between 12 and 13 acres, and the whole is surrounded by a moat of no great depth. Usually the moat is dry, but the garrison have the power of flooding it. Seen from without, the moat is bordered within by a lofty castellated wall, broken by massive flanking-towers at frequent intervals. Within this wall rises a second wall of similar construction but greater height; and within this are the several barracks, armories, etc.; and in the centre of all, the lofty keep or donjon known as the White Tower. This last, which nearly resembles Rochester Castle, and, like it, was built by Gundulph, Bp. of Rochester, in the time of William the Conqueror, is the centre of interest and antiquity in the whole structure. Its walls are in parts 16 ft. thick, of solid masonry. This tower was the court of the Plantagenet kings. The various other towers are noteworthy principally for the illustrious prisoners who have pined in them, or left them for the scaffold. In the n.w. corner of the quadrangle is St. Peter's Chapel, now the garrison church. In another part is the Jewel-house, containing the crown jewels, or *Regalia*, comprising several crowns, sceptres, globes, and jewels of enormous value. Near this building is the Horse-armory, a collection of ancient and mediæval arms and armor, the latter being exhibited in complete suits on wooden figures of men and horses. To the crown jewels and the armory, visitors are admitted on payment of a small fee.

Early writers alleged that Julius Cæsar built the Tower of London as a Roman fortress; but there is no record to prove the existence of any fortress on this site before the construction of the White Tower by Bp. Gundulph 1078. Some earlier structure of the Saxon times appears to have been there, from the massive foundations discovered in the course of subsequent erections; but of the nature of those buildings nothing is known. During the reigns of the first two Norman kings, the Tower seems to have been used as a fortress merely. In Henry I.'s time it was already a state prison. That monarch and his successors gradually increased the size and strength of the ramparts and towers, until the whole became a stronghold of the first class for feudal times. The kings frequently resided there, holding their courts, and sometimes sustaining sieges and blockades from their rebellious subjects. Of the long list of executions of prisoners confined here for political offenses, real or imputed, that of Lords Kilmarnock, Balmerino, and Lovat, after the rebellion of 1745, was the last. Wilkes, Horne-Tooke, and others have since been confined there; but, happily, blood has ceased to flow since the existence of a living political opposition has been found consistent with the safety of the government.

Not the least interesting memorials are the quaint and touching inscriptions cut by hapless prisoners on the walls of their dungeons.

In 1841 a serious fire broke out in the Bowyer Tower, and extended to the armories, causing the destruction of numerous modern buildings and many thousand stand of arms. At present the Tower of London is a great military store-house in charge of the war dept., containing arms and accoutrements for complete equipment of a large army. The mint and public records, formerly kept in it, have been removed to other buildings more suitable. Flamsteed, when first appointed astronomer-royal, made his observations from the summit of the White Tower; afterward he removed to Greenwich. As a fortress, the Tower would be useless against modern arms.

The government is vested in a constable, who has great privileges, and is usually a milit. officer of long service and distinguished mark; the deputy-constable, also a gen. officer of repute, is the actual governor. He has a small staff under him, and the corps of yeomen of the guard, jocularly known as Beef-eaters (see BEEF-EATER). In addition, a wing, and occasionally a battalion, of infantry is quartered in the barracks.—Bayley's *History of the Tower of London*, 2 vols. 4to; *Memoirs of the Tower*, by Britton and Brayley (1831); *Memorials of the Tower of London*, by Lord De Ros (1866); *Her Majesty's Tower*, by Hepworth Dixon, 4 vols. (1871).

TO WIT, ad. *tû wĭt'* [*to*, and *wit*]: namely; that is to say.

TOWLE, *tōl*, **George Makepeace**: author: b. Washington, D. C., 1841, Aug. 27. He graduated at Yale 1861, and in law at Harvard 1863; practiced law in Boston till 1865; was U. S. consul at Nantes, France, 1866–68, and then in Bradford, England, till 1870. He was an editorial writer for the Boston *Commercial Advertiser* 1870–71, and for the Boston *Post* 1871–76. He was a frequent contributor of essays (largely biographical and historical) to magazines, and is author of a great number of books; among them: *American Society* (London 1870); *Modern Greece;* 6 vols. of *Young Folks' Heroes of History; Modern France; Young People's History of England; of Ireland.* He d. 1893, Aug. 8.

TOWN, n. *town* [Low Ger. *tuun*, an inclosed place: Icel. *tún*, an inclosure: Gael. *tuin*, a dwelling: Scot. *toon*, a hamlet, a farm-house: Ger. *zaun*, a hedge: AS. *tynan*, to inclose]: originally, an inclosed place, or a place hedged in, then a farm, dwelling, village, or collection of houses walled in; any collection of houses larger than a village, generally a borough or city; any principal collection of houses of a county; the people of a town or city. **Town'less**, a. *-lĕs*, without towns. **Town-adjutant**, **Town-major**, milit. officers on the staff of a garrison, usually veterans—the adjutant ranking as capt., the major as lieut. **Town-clerk**, the clerk to a town or to a municipal corporation, elected in the United Kingdom by the town-council, and in the United States by the townspeople. **Town-council**, body of representatives elected by their fellow-citizens to manage the municipal affairs. **Town-crier**, person employed by a town to make announcements of sales, intended meetings, etc. **Town-hall**, building where the public business of a town is transacted. **Town-house**, residence in a town, as distinguished from a *country-house*. **Township**. n. the territory or district of a town; a subdivision of a county: in *Eng. law*, a division of a parish in which there is a separate constable, and for which there may be separate overseers of the poor (see Municipality). **Townsfolk**, n. *townz'fōk*, the people of a town or city. **Towns'man**, n. an inhabitant of the same town. **Town-talk**, the subject of common conversation.—*Town*, in the United States, is sometimes used, as in New England, in the sense of *township*, a subdivision of a county. In other states it is a municipal corporation of a kind inferior to a city in organization and powers, extending over a definite portion of a township (see Municipality).

TOWNE SCIENTIFIC SCHOOL: see Pennsylvania, University of.

TOWNSEND, *town'zĕnd*, **Edward Davis**: soldier: b. Boston, 1817, Aug. 22. He was educated at Harvard; graduated at West Point and became 2d lieut. of artillery 1837. He served in the Florida war, and in the troubles 1838–41 on the Canadian frontier; thenceforward his duties were at the headquarters of the army in the adjt.gen.'s office. He attained the actual rank of col. 1861 and was brevetted brig.gen. 1864, maj.gen. 1865; retired 1880. He d. 1893, May 11.

TOWN'SEND, George Alfred: journalist: b. Georgetown, Del., 1841, Jan. 30. He obtained employment in a Philadelphia newspaper office 1860; was war correspondent of the New York *Herald* for some months 1862; then visited Europe as correspondent of newspapers, meanwhile lecturing on the Amer. civil war; returning to America 1864, he was again a war correspondent; after the war he delivered lectures throughout the country. He chronicled the Austro-Prussian war of 1866 in letters from the field. He adopted the signature 'Gath' 1868. He is author of several books; among them biographies of Garibaldi and Lincoln, a few light dramas, and some novels; among the latter *Dr. Priestley, or the Federalists*.

TOWN'SEND, Luther Tracy, D.D.: Methodist Episc. minister, and author: b. Orono, Me., 1838, Sep. 27. He was educated at Dartmouth Coll. and Andover Theol. Sem., and then was ordained to the ministry. He has been prof. of theol. in Boston Univ. since 1867. He is author of many books, some of which have had wide circulation; among them are *The Bible and Other Anc. Literature in the 19th C.*, *Credo*, *God-Man*, *Bible Theology and Modern Thought*.

TOWNSHEND, *town'zĕnd*, **Charles, The Right Hon.**: English orator and statesman: 1725, Aug. 29—1767, Sep. 4; second son of the third Viscount T. He entered the house of commons 1747, as a supporter of the Pelham (whig) administration. His first great speech was against the Marriage Bill 1753, which gained him great reputation for eloquence. At the dissolution of the whig govt., the Earl of Bute gained him by the offer of the post of sec. at war. On Bute's resignation 1763, T. was appointed first lord of trade and the plantations. By this time the versatility of his political career had obtained him the appellation of 'the Weathercock.' In the Chatham ministry 1766, he accepted the post of chancellor of the exchequer and leader of the house of commons. When Lord Chatham, in a distempered state of mind, abdicated the post of first minister, T. broke loose from all restraint, and manifested immense vanity, ambition, and arrogance. George Grenville, smarting under the defeat of his favorite scheme of taxing America, on one occasion, in the middle of his harangue, turned to the ministers: 'You are cowards,' he said; 'you are afraid of the Americans; you dare not tax America.' T.'s fiery temper was kindled, and he exclaimed: 'Dare not tax America! I dare tax America.' Grenville retorted: 'I wish to God I could see it!' and T. replied: 'I will, I will.' He was not allowed to forget his pledge; and finding the notion of an American revenue agreeable to the court and not unpalatable to the house of commons, he proposed and carried those measures that led ultimately to the separation of the American colonies. T.'s wife was created Baroness Greenwich, and he was about to be intrusted with formation of a ministry when he was carried away by a putrid fever in his 42d year. The difference between his contemporary reputation and his fame is very striking. He was ranked as an orator with Pitt. He was far more popular than the great commoner with the house of commons, in which assembly he made many speeches whose wit and recklessness alike were unbounded. Burke called him 'the delight and ornament of the house of commons.' Macaulay speaks of him as 'the most brilliant and versatile of mankind,' who had 'belonged to every party, and cared for none.' He married Caroline, daughter and heiress of John, second Duke of Argyle and Greenwich, and widow of the Earl of Dalkeith.

TOWN'SHEND (CHARLES TOWNSHEND), second Viscount: English statesman: 1674–1738, June 21; descended from a very ancient Eng. family, settled at Raynham, Norfolk, since the reign of Henry I. His father, Horatio, first Viscount T., had been a prominent member of the Presb. party before the Restoration; and, having been one of the most forward in restoring the monarchy, was by Charles II. made baron 1661, viscount 1682: he died 1687, when his son was only 11 years old. When he was of age to take his seat in the upper house, he adopted his father's politics, but soon became a disciple of Lord Somers, and cordially co-operated with the whigs. He was employed as a diplomatist; was joint-plenipotentiary with Marlborough at Gertruydenberg; and negotiated with the states-general the Barrier treaty, which pledged the states-general to the Hanoverian succession, and England to procure the Spanish Low Countries for the United Provinces, as a barrier against France. In 1712, on formation of the Harley ministry, T. was dismissed from his places, and the Barrier treaty was censured by the house of commons, which voted that T. and all who had been concerned in the treaty were enemies to the queen and kingdom. This persecution raised him from a follower to a leader. He maintained close correspondence with the court of Hanover, and obtained the entire confidence of George I., who, on his accession to the throne of England, made him his chief minister. While George I. was still at the Hague, on his way to his new kingdom, he made T. sec. of state, with power to name his colleague. He selected Gen., afterward Earl, Stanhope, and formed a ministry entirely whig in party character. He strengthened it by the addition of Walpole, who, from being at first paymaster of the forces, was soon made chancellor of the exchequer and first lord of the treasury. The principal act of the govt. was the passing of the Septennial Bill, a bold and unconstitutional act. After the breaking of the South Sea Bubble, and the deaths of Sunderland and Stanhope (q.v.), T. (1721) again became sec of state. But he was no longer the acknowledged leader of the whigs. The superior talent of Walpole, with his financial abilities and his influence in the house of commons, caused a change in the relative position of the two ministers, and converted into rivals and enemies those who long had been friends and colleagues, and who were also family connections (for T. had married Walpole's sister). An unseemly quarrel broke out between them: they seized each other by the collar, and then laid hands on their swords. The interposition of friends prevented a duel; and T., resigning the contest, retired to Raynham to cultivate his paternal acres. Walpole, on being asked the cause of his difference with his brother-in-law, replied: 'As long as the firm was Townshend and Walpole, all did very well; but when it became Walpole and Townshend, things went wrong, and a separation ensued.' T.'s temper was resolute and imperious; but he left office with hands absolutely clean from selfish gain. T. introduced the turnip into Norfolk from Germany, effecting a beneficial revolution in agriculture. He steadily refused to reappear in public life, and died in a good old age, leaving a high reputation for integrity and steady consistency in sound and constitutional principles of government.

TOWSON, *tow'son*. **Nathan**: soldier: 1784, Jan. 22—1854, July 20; b. near Baltimore, Md. He earned distinction by gallantry, and was brevetted maj.gen. 1848.

TOXIC, a. *tŏks'ĭk*, or **Tox'ical**, a. *-ĭ-kăl* [Gr. *toxĭkŏn*, a poison]: poisonous. **Toxic amaurosis**, impaired vision and blindness due to the action of a poison.

TOXICANT, n. *tŏks'ĭk-ant* [Eng. *toxic*]: poison: Adj. having poisonous effect.

TOXICODEN'DRON: see Sumach.

TOXICOLOGY, n. *tŏks'ĭ-kŏl'ŏ-jĭ* [Gr. *toxĭkŏn*, a poison; *logos*, discourse]: that branch of medical science which relates to poisons, their effects, detection, and antidotes. **Tox'icolog'ical**, a. *-kō-lŏj'ĭ-kăl*, of or relating to toxicology. **Tox'icolog'ically**, ad. *-lĭ*. **Tox'icol'ogist**, n. *-kŏl'ŏ-jĭst*, one who is skilled in the science which relates to poisons.—*Toxicology* embraces the physical and chemical history of poisonous substances, the methods of testing for them, their action on the living body, the *post-mortem* results which they occasion, and (according to some writers) the medical treatment that should be adopted. The word has a somewhat far-fetched origin (from Gr. *toxikon* and *logos*). The Greek word *toxikon* signifies 'anything relating to *toxon*, a bow;' hence with the word *pharmacon*, a drug, it was used to designate 'poison for smearing arrows,' and then *poison* generally.

TOXIN, or **Toxine**, n. *tŏx'in*, or *-ēn* [from Gr. *toxikon*, from *toxikos*, of the bow, from *toxon*, bow]: in *chem.*, a poisonous base found in animals, caused by tissue-metabolism; a poisonous ptomaine.—See Ptomaine: Bacillus: Bacteria: Tuberculosis: Anti-toxin: etc.

TOXOPHILITE, n. *tŏks-ŏf'ĭ-līt* [Gr. *toxon*, a bow; *philos*, a lover]: a lover of archery; an archer: Adj. of or pertaining to archery.

TOY, n. *toy* [an ellipse for *play-toy*, implements of play: Low Ger. *tūg;* Dut. *tuig;* Dan. *tŏi*, materials, implements: Ger. *zeug*, materials, lumber; *spielzeug*, toys]: a child's plaything; a bauble; that which is valued for its look only, or for amusement; in *OE.*, play; sport; amorous dalliance; old story; odd conceit; wild fancy: V. [OE. *togge*, to tug (see Tug)]: to handle amorously; to trifle; to treat foolishly; to play with. **Toy'ing**, imp. **Toyed**, pp. *toyd*. **Toy'ish**, a. *-ĭsh*, trifling; playful. **Toy'ishly**, ad. *-lĭ*. **Toy'ishness**, n. *-nĕs*, the quality or state of being toy-ish. **Toy'some**, a. *-sŭm*, or **Toy'ful**, a. *-fûl*, full of dalliance; wanton. **Toyshop**, a shop where toys are sold. *Note.*—Toy as a noun and verb have really different roots, but the senses have become so mixed up that it was thought better to group them together.—*Toys* are made in great numbers in London, Birmingham, and other places in Great Britain; but much more extensively in Germany and Switzerland. Nuremberg especially is important in this respect, a large portion of the inhabitants of that town being engaged in the manufacture and sale of toys. Japan also is noted for its toys.

TOY, Crawford Howell, d.d., ll.d.: educator: b. Norfolk, Va., 1836, Mar. 23. He graduated at the Univ. of Virginia 1856; was ordained 1860 as a Bapt. minister; then was teacher in different educational institutions; chaplain in the Confederate army during the secession war; studied Semitic languages in Berlin 1866–68, and afterward was prof. of Hebrew in the Southern Bapt. Theol. Sem.; since 1880 he has held the chair of Hebrew at Harvard Univ. He is author of *History of the Religion of Israel;* and has gained note as a free critic of the Hebrew Scriptures.

TOYN'BEE HALL: centre for charitable and educational work in the Whitechapel dist. of London; named after Arnold Toynbee (d. 1883), in commemoration of his earnest endeavors to better the condition of the poor. It is conducted by graduates of English universities, and is one of the 'university settlements.' About 15 univ. men are in residence at T. H., most of whom give their whole time to the beneficent work, living at their own charges. The T. H. men have for their object the moral elevation and the mental improvement of the people among whom they have established themselves, and they are also leaders in all charitable and reformatory effort in their district. In their hall during the winter the lectures of the univ. extension are given; also, classes are conducted for instruction in various branches of knowledge, particularly in political economy. The library comprises 4,000 vols. Among the annexes of T. H. is a sort of college affording residence accommodation to 40 young men—clerks, artisans, schoolmasters, etc.—desirous of pursuing historical, economic, literary, and other studies.

TRABECULA, n. *tră-bĕk'ū-lă*, **Trabec'ulæ**, n. plu. *-ū-lē* [L. *trăbecŭla*, a little beam or rafter—from *trabs*, a beam]: in *bot.*, cross-bar-like projection extending across the cell cavity of the ducts of some plants, or across the cavity of the sporangium of many mosses; plu. in *anat.*, fibrous cords or tissues which ramify the substance of various soft organs, such as the spleen. **Trabecular**, a. *tră-bĕk'ū-lėr*, of, pertaining to, or of the nature of the bands or fibres called trabeculæ. **Trabeculate**, a. *tră-bĕk'ū-lāt*, traversed by trabeculæ.

TRACE, n. *trās* [F. *trace;* It. *traccia,* a trace, a point of the foot: Sp. *traza,* first sketch, outline: F. *tracer,* to trace, pursue—from L. *tractus,* pp. of *trahĕrĕ,* to draw]: mark or visible appearance left by something passing; a footstep; a vestige; a token; a track; remains; minute quantity: V. to delineate with marks; to follow by the visible marks left; to follow by footsteps or tracks; to follow exactly; in *OE.,* to walk over; to walk; to travel. **Tra'cing,** imp.: N. course; regular track or path; a delineation by visible marks; a plan; a sketch. **Traced,** pp. *trāst,* marked out; followed by footsteps. **Tra'cer,** n. *-sėr,* one who traces. **Trace'able,** a. *-sā-bl,* that may be traced. **Trace'ably,** ad. *-blĭ.* **Trace'ableness,** n. *-bl-nĕs,* the state of being traceable. **Tra'cery,** n. *-sėr-ĭ,* artistic work in fanciful and flowing outlines; certain kinds of ornamental stonework, as in Gothic windows (see below). **Tracing-paper,** a semi-transparent paper used in copying sketches or outlines, over which it is laid (see Paper).

TRACE, n. *trās,* usually in the plu. **Traces,** *trā'sĕz* [OE. *trayce,* horses' harness: OF. *traict;* F. *trait,* a team-trace, a shaft—from L. *tractus,* a drawing or dragging—from *trahĕrĕ,* to draw]: one of the two straps, ropes, or chains by which a vehicle is drawn by the horse or other draught-animal to which it is harnessed; a 'tug.'

TRA'CERY: in *arch.,* ornamental open-work in stone with which the arches of Gothic windows are filled for support of the glass. This open-work varies with every variety of Gothic architecture. Gothic windows were at first narrow, and covered with a simple arch. Then two windows were grouped, and an arch thrown over both. The space thus inclosed became part of the window, and was at first pierced with a circle, quatrefoil, or other opening (fig. 1). When three or more windows were grouped under one arch, the *shield* or space in the arch became larger, and was pierced with apertures of various forms. In the early Pointed styles these were usually circles filled with cinquefoils, trefoils, etc. (fig. 2). During the Decorated period the T. became more varied, composed of squares, triangles, and other forms, filled with foils, and

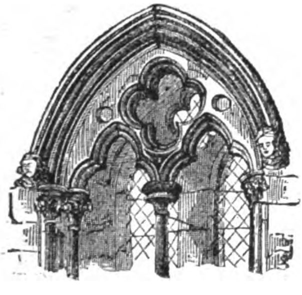


Fig. 1.

having the appearance of being packed together (fig. 3). This kind of T. is called 'Geometric.' The windows of the transition from Decorated to Perpendicular had T. of more flowing character, while that of the Perpendicular Period (q.v.) became almost entirely composed of vertical lines. The Flamboyant (q.v.) or contemporary style in France had T. of very different style—as free and graceful as the other was straight and stiff.—Panels are often filled with T.: such panels cover the exteriors of the Perpendicular period. The wood-work of all periods is filled with ornamental tracery.

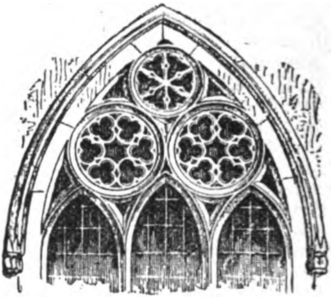


Fig. 2.

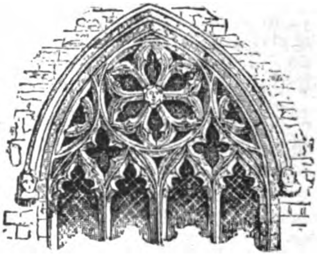


Fig. 3.

TRACHEA, n. *tră-kē'ă* [Gr. *trachus*, rough, rugged—fem. *tracheia*, the word *artēria*, artery, being understood]: cartilaginous and membranous tube which conveys the air into and out of the lungs; the windpipe (see RESPIRATION). TRACHE'Æ, plu. *-ē*, the air-tubes of the body in insects: in *bot.*, the spiral vessels of plants. TRACHE'AL, a. *-ăl*, pertaining to the windpipe. TRACHEARY, a. *trăk'ē-ă-rĭ*, pertaining to the trachea; pertaining to the spiral vessels of plants; breathing through tracheæ. TRACHEITIS, n. *trăk-ē-ī'tĭs*, or TRACHITIS, n. *tră-kī'tĭs*, inflammation of the trachea. TRACHEOTOME, n. *tră'kē-o-tōm*, a surgical knife or lancet for making an incision in the windpipe.

TRACHE'A, Affections of the: ailments of the trachea which require surgical or medical aid.—*Foreign bodies* occasionally pass through the larynx into the trachea. In cases of this kind, the patient who has had some foreign substance in his mouth, which is supposed to have been swallowed, is seized with a convulsive cough, threatening suffocation, but subsiding after a time. The symptoms that then ensue vary with the weight and figure of the substance, and according as it is fixed or movable. A large and very irregular body may be impacted in the trachea, more or less obstructing respiration on both sides of the chest; and this obstruction will probably soon be increased by the inflammatory products that are excited. A small heavy body will usually pass through the trachea into one of the bronchi (usually the right), or into one of its branches, obstructing respiration to a less extent. 'If the foreign body be allowed to remain, the progress of the symptoms presents much variety in different cases. Death may occur from spasm of the glottis, or, the foreign body being propelled upward into the rima, death may take place by its mechanically preventing the passage of air; or rupture of one of the cerebral blood-vessels may be produced during one of the fits of coughing. At a later period the lungs may become congested and emphysematous, or bronchitis, pneumonia, or pleurisy may supervene.' Although inversion of the body, with succussion and lateral movement of the larynx, has in some few cases been successful, it is now deemed advisable by the highest authorities to precede the attempt at removal by making an artificial opening into the windpipe. A free aperture is thus secured for respiration, spasm of the glottis is prevented, and the foreign body is commonly expelled through the artificial opening, or falls through the glottis into the mouth.—*Rupture of the Trachea* from external injury sometimes (though rarely) occurs, and generally proves fatal in consequence of the rapid and extensive emphysema which usually ensues. —*Wounds of the Trachea:* see Throat.—Except Croup (q.v.), there is no special disease of the trachea; indeed, in croup the trachea is seldom exclusively affected. Hence the term *Tracheitis*, used by some nosologists as synonymous with croup, is hardly warrantable. Similarly, in more advanced life the trachea is doubtless often the seat of inflammation, but never the special and exclusive seat, and both the symptoms and treatment merge into those of bronchitis or laryngitis.

TRACHEARIA, n. plu. *trăk'ĕ-ā'rĭ-ă* [Eng *trachea*, the windpipe]: the division of Arachnida which breathe by means of tracheæ; also named **Tracheata**, n. plu. *trăk-ĕ-ā'tă*. **Tracheides**, n. plu. *trăk-ĕ-ī'dēs* [Gr. *eidos*, resemblance]: in *bot.*, spiral vessels which serve as air-conducting tubes after the protoplasm and cell-sap have disappeared.

TRACHEOTOMY, n. *trăk'ĕ-ŏt'ō-mĭ* [Eng. *trachea*, the windpipe; Gr. *tomē*, a cutting]: in *surgery*, operation of making an opening in the windpipe. LARYNGOT'OMY is for convenience included here.—The air-passages may be opened in three different situations—namely, through the crico-thyroid membrane (see LARYNX), when the operation is termed Laryngotomy; through the cricoid cartilage and the upper rings of the trachea—Laryngo-tracheotomy; and through the trachea, below the isthmus of the thyroid gland—Tracheotomy proper. Laryngotomy and tracheotomy are more frequent than laryngo-tracheotomy, to which no further allusion is required. Laryngotomy is more quickly and easily performed, especially in adult males, and is less dangerous; tracheotomy is more difficult, tedious, and dangerous, but must be selected in some cases, e.g., where there is necessity for introducing the forceps. When the operation is completed, a large curved tube to breathe through is inserted in the aperture, and secured round the neck with a tape.

A double tube or canula has many advantages, as by withdrawing the inner one, which should slightly project at its lower extremity, it may be cleared of any mucus or blood that may have accumulated in it without disturbing the wound. The calibre of the inner tube should always be sufficiently large to admit as much air as usually passes through the chink of the healthy glottis. The after-treatment is much the same as that required for wounds in the Throat (q.v.). 'Opening of the air-passages may be required,' says Gray, 'in any case of disease or injury which produces mechanical impediment to the passage of air from the mouth into the trachea; in cases of foreign substances in the air-passages; and in some cases of suspended animation where artificial inflation of the lungs cannot be performed by the ordinary means.' In the case of a foreign body, its situation will determine the seat of the incision. Among the cases in which tracheotomy may be required are cut throat, acute laryngitis, croup, diphtheria, chronic inflammation and ulceration of the larynx, necrosis of the laryngeal cartilages; tumors, excrescences, or epithelial growth within the larynx; tumors (bronchocele, abscesses, etc.) external to the larynx or upper part of the trachea, and impeding respiration by pressure, etc. It has been recommended, but with little advantage, also in hydrophobia, tetanus, and severe forms of epilepsy, for relieving the suffocating spasms in these diseases. Laryngotomy may advantageously be resorted to in cases of spasm of the glottis, in inflammation with œdema of the cellular tissue of the larynx, in inflammation of the tongue, in tonsillitis and pharyngitis if the swelling is so great as to produce symptoms of suffocation, etc.

TRACHOMA, *trā-kō'ma* [from Gr. *tràchoma*, roughness—from *trachus*, rough]: in *surgery*, a granular condition of the mucous covering of the eyelids, often accompanied with haziness and vascularity of the cornea; granular lids: one of the most serious *sequelæ* of purulent Ophthalmia (q.v.).

TRACHYTE, n. *trăk'īt* [Gr. *trachus*, rough]: in *geol.*, a volcanic rock, rough and gritty to the touch, composed chiefly of Felspar (q.v.), confusedly agglomerated in crystals, which are usually very small or wholly indistinguishable, and lustreless. Much of the T. is like ashes in appearance, but hardened into stone; and, in fact, such it is in many instances, if not in all—submarine volcanic ash, indurated but light on account of its minutely vesicular structure, due to the presence of steam in its formation. Crystals of mica and hornblende also are often present, and more rarely crystals of augite, all imbedded in a felspathic paste. T. in many varieties abounds in the Rocky Mt. region; and a beautiful purple kind is used for fine buildings in Denver, Colo., and elsewhere. By some geologists T. has been made the name of a class of volcanic rocks, in which Clinkstone, Obsidian, and Pumice are included. TRACHYTIC, a. *tră-kĭt'ĭk*, pertaining to or consisting of trachyte. TRACHYTIC PORPHYRY, a porphyry composed essentially of trachyte.

TRACK, n. *trăk* [OF. *trac*, a beaten way, a trade or course: Ger. *trapp*, the sound of the footfall, a foot-print: Norw. *trakka*, to trample: Dut. *trekken*, to draw, travel, march: confused in old authors with *tract*, and in old and modern authors with *trace*]: a footmark; a mark or marks left upon the way by something that has passed along; a beaten path; course; road; way; in *rail.*, the permanent way: V. to follow by the marks left upon the way; to tow a vessel by a rope, as into a harbor or along a canal. TRACK'ING, imp. TRACKED, pp. *trăkt.* TRACK'ER, n. *-ĕr*, one who follows by the marks or footsteps. TRACK'LESS, a. *-lĕs*, without a road or path; untrodden. TRACK'LESSLY, ad. *-lĭ.* TRACK'LESSNESS, n. *-nĕs*, the state of being trackless or without a track. TRACK-ROAD, a towing-path. TO MAKE TRACKS, in *slang*, to depart.

TRACT, n. *trăkt* [L. *tractus*, a drawing or dragging, a district; *tractātus*, a handling, a treatise; *tractus*, pp. of *trahĕrĕ*, to draw]: extent; expanse; stretch or area of land or water of indefinite extent; region; a short treatise on a particular subject in the form of a pamphlet; length; extent; in *OE.*, discourse; explanation; also used for *track* in OE.: V. in *OE.*, to trace out. TRACTARIAN, n. *trăk-tā'rĭ-ăn*, one of the writers of the Oxford '*Tracts* for the Times' (1833–41); a supporter of Tractarianism: ADJ. of or pertaining to Tractarianism. TRACTA'RIANISM (see below). TRACTATE, n. *trăk'tāt*, a small book; a tract; a treatise. TRACTS FOR THE TIMES, or OXFORD TRACTS (see TRACTARIANISM).—SYN. of 'tract, n.': region; quarter; district; treatise; dissertation; essay; monograph.

TRACTABLE, a. *trăk'tă-bl* [L. *tractab'ĭlĭs*, quiet, manageable—from *tractārĕ*, to handle, to manage—from *tractus*, pp. of *trahĕrĕ*, to draw]: easily led, managed, or taught; docile. TRAC'TABLY, ad. *-blĭ.* TRAC'TABLENESS, n. *-bl-nĕs*, or TRAC'TABILITY, n. *-bĭl'ĭ-tĭ*, the state or quality of being tractable or manageable; docility.

TRACTA'RIANISM: remarkable and important movement in the English Church during the second quarter of the 19th c., consisting in an endeavor to revive and bring into prominence the principles of antiquity, catholicity, and authority recognized in some portions of the Anglican formularies, in reaction from the Prot. sentiments long and widely prevailing. The name is from a series of papers entitled *Tracts for the Times*, pub. at Oxford 1833–41, hence called the 'Oxford Tracts.'—The agitation of the question of Rom. Cath. emancipation led, in some cases, to the study of Rom. Cath. theology, with a view to determine the real grounds of difference between the Roman and Anglican churches; and the religious and æsthetic tone of Wordsworth's poetry, still more developed in Keble's *Christian Year* (1828), may have influenced some minds in a direction to which T. was akin. The lectures of Bp. Lloyd, when Regius prof. of divinity at Oxford about 1823, on the Prayer-book and the Council of Trent, are considered to have opened the way to the teaching of the *Tracts*. But the immediate origin of the movement appears to have been the alarm aroused for the interests of the English Church on occasion of the suppression by the reform govt. of some of the Irish sees, and the threatened alienation of Irish church property. It is said that about that time a meeting of clergymen took place at Hadley, in Suffolk, at which measures were concerted for opposing the alleged latitudinarian tendencies of the day, and restoring the high-church theology of the Anglican divines of the 17th c. The chief promoters of T. were the Rev. John Keble (q.v.), author of the *Christian Year*, and formerly prof. of poetry at Oxford; the Rev. John Henry Newman (q.v.) and R. H. Froude, fellows of Oriel; the Rev. E. B. Pusey (q.v.), Regius prof. of Hebrew and canon of Christ-Church; the Rev. Isaac Williams, fellow of Trinity, author of *The Cathedral, and Other Poems;* the Rev. Hugh Rose of Cambridge; and others. The *Tracts* were issued anonymously, and, with articles in the *British Critic* by the same writers, produced great effect, especially among the clergy. Protestant principles were openly discountenanced, and tenets closely resembling those of the Church of Rome were boldly advanced. The doctrines of Apostolical Succession Priestly Absolution, Baptismal Regeneration, the Real Presence, the Authority of the Church, and the Value of Tradition, which had long lain hid in the language of the Prayer-book, were widely revived and taught, and caused much alarm in some quarters; though it must be admitted that those principles had always been held by a portion of the English clergy, and have in some degree a place in the Book of Common Prayer. The study of the Fathers and old divines, of church history and ancient liturgies, was greatly revived in the universities and among the clergy, and a host of publications inculcating with more or less extravagance the same views issued from the press. The movement proceeded, notwithstanding the general opposition of the authorities, till it culminated in the publication, by the Rev. J. H. Newman, of Tract No.

90, designed to show that much Roman doctrine might be held consistently with subscription to the Thirty-nine Articles. This, being held to favor a 'non-natural' interpretation, met general condemnation, and led to the termination of the series, to the resignation by Newman of the vicarage of St. Mary's, Oxford, and subsequently to his secession 1845 to the Church of Rome. In this step he was followed by many of his friends and associates, though the other leaders of the movement continued in the English Church. With Newman's secession the Tractarian movement terminated; but its effect remains in several visible results. 1. There was a revival and strengthening of the high-church party, which still maintains to a great extent the principles advocated in the *Tracts;* and though checked in England by some judicial decisions, e.g., the Gorham (q.v.) judgment, in the endeavor to acquire exclusive power, has gained great and increasing influence in the church. 2. Side by side with the revival of 'catholic' doctrines there has been great development of ritual. Though ritual was not in itself a prominent object in the minds of the leaders, the Tractarian movement was early marked by introduction of various alterations in the performance of divine service, such as the use of the surplice instead of the gown, intoning the prayers and singing the responses, elevation of the communion table into an altar, substitution of low open benches for high pews—all of which, though claiming to be a restoration of ancient usage and having the authority of the law, were regarded with alarm as approximating to the Church of Rome (see RITUALISM). 3. Another effect was the remarkable impulse given to the building and restoration of churches, and the revival of Gothic architecture, in all parts of England: this has given a character to the ecclesiastical buildings of the 19th c. which will mark them for ages to come. 4. The movement has undoubtedly caused the secession of many English clergy and laity, some of them men of eminence, to the Church of Rome, which has greatly increased the strength and influence of the Roman communion in Britain and America, and caused great scandal to zealous Protestants. Lastly, the movement may be admitted to have involved an awakening of the Anglican Church from lethargy, with the result of an increase of learning, piety, and devotedness among the clergy, and the establishment of colleges, sisterhoods, and other religious and charitable institutions; and latterly to have developed a noble zeal in bringing Christian forces to bear on the vast indifferent masses and on the lowest and most degraded.—The daughter church in the United States has naturally shared in the general effects of this movement.

TRACTILE, TRACTION: see under TRACTÓR.

TRAC'TION-EN'GINE: self-propelling engine, for drawing loads on common roads. It has been a favorite idea with mechanicians to make a light carriage, for use on ordinary roads, containing a steam-engine and boiler to propel itself. No doubt such a vehicle for light loads can be easily made, but its cost will be great in proportion to any service that it can render.

The true application of steam on common roads is in the drawing of heavy loads which would require an inconveniently large number of horses. Engines for this purpose are called *traction-engines*, and their use is increasing. Traction-engines or road-locomotives are now made by the chief makers of agricultural implements. These are of different types—some for drawing very heavy loads; some for lighter work, such as drawing a threshing-machine from place to place over moderate gradients; these latter being adapted also for a variety of purposes for which a self-moving has been found to possess great advantages over an ordinary portable engine. Some recent forms of traction-engines have driving-wheels 7 or 8 ft. in diameter. One form has thick India-rubber tires—rings of India-rubber, four or five inches thick, stretched over the rim of the wheel, and protected by a flexible circle of steel shoes from damage by stones, etc. The advantage of such tires is the greater adhesion (in proportion to weight) which they give to the engine, and the saving the machinery from shocks and jars. Their great cost is a hindrance to their adoption.—See STEAM-CARRIAGE.

TRACTOR, n. *trăk'tėr* [L. *tractus*, a drawing or dragging—from *trahĕrĕ*, to draw or drag]: that which draws or is used for drawing. TRAC'TORY, n. *-tėr-ĭ*, or TRACTRIX, n. *trăk'trĭks*, in *geom.*, a curve of which the tangent is always equal to a given line. TRAC'TILE, a. *-tĭl*, that may be drawn out in length; ductile. TRAC'TION, n. *-shŭn* [F.—L.]: the act of drawing, or the state of being drawn; attraction. TRAC'TIVE, a. *-tĭv*, that pulls or draws; capable of pulling. TRAC'TORA'TION, n. *-tėr-ā'shŭn*, a disused method of treating diseases (see PERKINS, ELISHA). ELECTRIC TRACTION (see ELECTRIC RAILWAY).

TRACT SOCI'ETIES: see RELIGIOUS TRACT SOCIETY.

TRACY, *trā'sĭ*, BENJAMIN FRANKLIN: lawyer: b. Owego, N. Y., 1830, Apr. 26. He received an academical education; was admitted to the bar 1851; became dist.-atty. of Tioga co., N. Y., 1854; and was re-elected 1856. In 1861 he was elected to the legislature; 1862 organized three regiments for the Union army; and, after serving through the Wilderness campaign and receiving the brevet of brig.gen., was placed in command of the Elmira camp of Confederate prisoners, and remained there till the close of the war. He was appointed U. S. dist.atty. 1866; declined reappointment 1868; was counsel for the defense in the Tilton-Beecher trial; and served a short time as a judge of the N. Y. court of appeals. In 1889 he became sec. of the navy in Pres. Harrison's cabinet, and 1890, Feb. 3, his wife, daughter, and wife's maid were burned to death by fire in his Washington residence, and he narrowly escaped. His administration of the naval dept. was notably careful, thorough, and energetic. In 1897 he was nominated as the republican candidate for the first mayor of the enlarged New York. The republican vote was divided, and he was defeated by a great majority.

TRADE, n. *trād* [AS. *træd*, trod; *tredan*, to tread: Dan. *trade;* Goth. *trudan*, to tread (see TREAD, of which *trade* is a derivative)]: the proper meaning of *trade*, frequently found in *OE.*, is trodden way, beaten path or course, and, hence, a way of life; the handicraft which a person has learned, and which he carries on for a livelihood; mechanical or mercantile employment, as distinguished from a learned profession: occupation: the body of persons engaged in the same particular employment; the business of buying and selling by barter or for money; commerce: in *OE.*, a standing practice; habit; custom: V. to engage in selling and buying for money or by barter; to carry on commerce; to deal; to traffic; to sell or exchange in commerce. **TRA'DING**, imp.: ADJ. carrying on commerce; as applied to politicians and public men, venal; having the character of an adventurer; having a price: N. the act of one who carries on a trade; the business of carrying on trade. **TRA'DED**, pp.: ADJ. in *OE.*, versed; practiced. **TRA'DER**, n. *-dėr*, one engaged in buying and selling commodities; vessel sailing with goods for trading. **TRADE CORPORATIONS** (see CORPORATION: JOINT-STOCK COMPANY). **TRADE-PRICE**, the price after deducting discount allowed to retailers; the price at which wholesale traders supply goods to retailers. **TRADE-SALE**, a sale by auction for any particular trade, especially booksellers or publishers. **TRADESFOLK**, n. *trādz'fōk*, persons engaged in trade. **TRADES'MAN**, n. *-măn*, a craftsman; a mechanic; a common name for a shopkeeper. **TRADE-MARK**, symbol impressed by a tradesman or manufacturer on his own goods (see below). **TRADES-PEOPLE**, persons engaged in trades, especially shop-keeping. **TRADE-UNION**, or **TRADES-UNION**, combination among workmen having in view the settlement of the proportion which wages should bear to the profits of the employers, and the redress of grievances (see below). **TRADE-PROTECTION SOCIETIES** (see COMMERCIAL REGISTER). **TRADE-WINDS**, called also **TRADES**, winds which hold a certain steady course; winds in or near the torrid zone, which n. of the equator blow from the n.e., and s. of the equator blow from the s.e. (see WIND).—SYN. of 'trade, n.': commerce; traffic; dealing; profession; occupation; office; employment; calling; business; vocation.

TRADE, BOARD OF: in the United States, an assoc. of business men for furtherance of trade, as by suggesting and encouraging suitable legislation in regard to tariffs, banking, insurance, shipping, etc.; a Chamber of Commerce (q.v.).

In the United Kingdom, the board of trade is a department or group of departments of government more correctly designated 'The Lords of the Committee of Her Majesty's Privy Council appointed for the Consideration of All Matters relating to Trade and Foreign Plantations.' In 1660 Charles II. created two separate councils for trade and for foreign plantations, which were consolidated 1672. In 1786 the now existing dept. was established for consideration of all matters relating to trade and the colonies. The board is now divided into five departments: (1) statistical and commercial, (2) railway, (3) marine, (4) harbor, (5) financial. The presidentship has been held since 1864 by a cabinet minister.

The functions of the board of trade are partly ministerial, partly judicial, and have been greatly enlarged by successive statutes. The board is charged with the general superintendence of all matters relating to the mercantile marine; and with supervision of railways and railway companies, both as to their original formation and their working. Many matters relating to the interests of trade which come before other governmental departments are referred to the board of trade for information or advice: thus, there are communications with the foreign office regarding the negotiation of commercial treaties, and with the treasury regarding alterations in the customs.

A statistical dept. of the board collects and publishes tables of classified information regarding the revenues, population, commerce, wealth, and moral and economical condition of the United Kingdom and its dependencies, and prepares a selection from the statistics of foreign countries, and a monthly account of trade and navigation. All applications by companies or private persons for charters of incorporation are referred to the board of trade; and among its functions is the registration of joint-stock companies and of copyright in designs.

TRADE, Liberty to: one of the rights incident to all persons by law in Great Britain and the United States. So absolute is this right that it is considered by courts of law to be an illegal and void covenant when a person, however deliberately, engages never to trade, inasmuch as it is against public policy to support it. In the sale of the good-will of a business, if a person engage absolutely not to carry on a particular business anywhere, his engagement is void; but it is competent to engage not to carry on a particular trade within a certain specified reasonable distance—as 20 or 30 m.—from a certain point, the reasonableness being estimated according to the nature of the trade and locality. If such an engagement were not legal, it would be impossible to negotiate the sale of the good-will of a business. Though, at common law, every man is free to carry on what trade he pleases, still there are many lawful trades subjected to certain restrictions, either ostensibly for purposes of revenue, or for protecting the public from certain evils attending such trades; e.g., see cross-references under LIQUOR: also BEER ACTS: GUNPOWDER, LAWS RELATING TO.

In Britain, the laws or customs of the ancient corporations and guilds, which formerly impeded trade by imposing certain conditions, were abolished 1835: the City of London, however, was excepted, and some of the ancient restrictions still flourish there (see NAVIGATION LAWS).

TRADE'-MARK: symbol, figure, monogram, or other device affixed by a manufacturer to his goods as a distinguishing mark to indicate their origin and genuineness. The earliest trade-marks seem to have been the water-marks in paper. The most ancient known water-mark is found on a document dated 1851. The use of these marks is an important privilege, as concerns both producer and consumer. A T.-M. may comprise a newly coined word, as 'Pearline,' or a combination of words, as 'Yankee Soap,' or a combination of letters, as 'A B C.' A geographical name is not usable as a T.-M.; nevertheless, it may sometimes be unlawful to use such geographical name, as is seen in the judgment of the court in the case of the 'Akron Cement Co.' *vs.* the manufacturers of 'Onondaga Akron Cement.' The court held that while the formula 'Akron Cement' cannot be a T.-M., the employment of it to designate cement not made at Akron is a fraud both on the public and on the plaintiffs. But the line between a valid T.-M. and an invalid one is not in all the adjudged cases clearly perceptible. Thus, it has been held by courts that 'snow flake,' as a designation of a certain kind of biscuits or crackers, is a 'mere description,' and not a proper T.-M., while the formula 'Insurance Oil' is a valid T.-M. A corporate name, a firm name, etc., though they are not trade-marks, are protected by the law.—In order to facilitate proof of property in trade-marks, congress provides for their registration at the patent-office. The U. S. govt. has concluded with many foreign govts. treaties for mutual protection of trade-marks. The treaty with Great Britain provides that every citizen of the United Kingdom and of the United States shall, each in the country of the other, possess with regard to trade-marks the same rights as native citizens, or the same rights 'as are now granted or may hereafter be granted to the citizens of the most favored nation.'—See COPYRIGHT.

TRADE SCHOOL: school for teaching mechanic arts practically. It differs from a technological institute in that the latter is concerned not less with the theory (or scientific principles) of industrial arts than with the manual operations, while the T. S. undertakes to teach only manual dexterity. It differs also from a manual-training school (as that term is usually understood) in that the purpose of the T. S. is to teach trades, i.e., to make of the pupil a carpenter, brick-layer, etc., while the manual-training school is part of a system of 'symmetrical education,' i.e., of education of the bodily powers and aptitudes as well as of the mental and moral. Thus the T. S. is in fact designed to afford the advantages of trade apprenticeship: whatever instruction it affords outside of that is incidental. The T. S. of New York has day and evening courses of trade-instruction for 3–5 mos. After one term, young men, it is asserted, can earn partial if not full wages in a trade. Some associations of master-tradesmen, e.g., plumbers, as also some private firms, industrial colleges, asylums, reformatories, and the Pratt Institute of Brooklyn, N. Y., the Free Institute of Worcester, Mass., and the Drexel Institute of Philadelphia, conduct trade schools. The trades taught in the New York T. S. are bricklaying, plumbing, carpentry, painting, stone-cutting, blacksmithing, tailoring.—See TECHNICAL EDUCATION.

TRADE'-UNION: association of workmen for the purpose of securing as favorable conditions of labor as possible, and for mutual assistance in contests with employers. Under this designation trade-unions date from about the middle of the 18th c., and were successively formed in consequence of the gradual disintegration of the solidarity formerly existing between employers and workmen. This disintegration is more immediately attributable to the rapid development of trade, the transference of the mastership of the great industries into the hands of large capitalists, and especially the introduction of machinery, which completely revolutionized the system of labor: see GUILD.

Disputes between employers and workmen came to light after the great pestilence of 1349, when in England it was enacted that carters, plowmen, and agricultural servants generally should be content with their previous rate of liveries and wages; they were to continue to be paid in kind where payment in kind had been customary; they were forbidden to hire themselves for the day, but must take service for a year or other fixed period; a rate of wages was fixed for weeders, haymakers, mowers, and reapers; and their hiring was to be in public. In 1363, the diet and clothing of artificers and servants were fixed by act of parliament, and clothiers were required to make, and tradesmen to sell, cloth of a regulated quality at a regulated price. The 3d Edward III. c. 9, and the 3d Henry VI. are directed against combinations of workmen, but only in the building trades: in fact, against only the journeymen members of the (operative) masons' lodges. One of the ordinances, however, of the 'Master-Shearmen' of 1350 shows that, prior to this date, journeymen in this trade had had recourse to strikes, and it was consequently ordained that henceforth all such disputes be settled by the warden of the trade. In 1562, by the 5th Eliz., c. 4, all previous enactments bearing on the customs and usages of the craft-guilds were codified, and their provisions extended to all the handicrafts of the time. No one, it was ordained, could exercise either as master or journeymen any art or manual occupation, except he had been brought up therein at least seven years as an apprentice. No one was to be bound apprentice who was not under 21 years of age. For three apprentices there was to be one journeymen, and for every apprentice more than three, another journeyman. No journeyman was to be taken for less than a year, and no servant to leave or be put away under less than a quarter's warning. There were definite regulations for hours of work and rate of wages. The 1st James I. c. 6, extends the power of the justices and town magistrates to fix the rate of wages for all laborers and workmen whatsoever.

A 'Report and Minutes of Evidence on the State of the Woolen Manufactures of England,' 1806, July 4, explains how in the 18th c. woolen manufactures were carried on by small masters in their own houses, in villages or in detached places where, besides, they often cultivated a small piece of land. The number of such small masters in the environs of Leeds was then estimated at 3,500. Every master had served a seven years' apprenticeship. Though the 5th Eliz. was unknown, its regulations were fully observed. In Harmley, a cloth-workers' village of 4,000 to 5,000 inhabitants, there were 97 apprentices bound for seven years, and only four for a shorter period. As a rule, all worked in the master's house. It was allowable for the apprentice, at the completion of his seven years, to settle as a master, but usually he worked one or two years longer as a journeyman. Slackness of trade did not usually stop work. The master seldom worked to order, but sold his cloth in the 'cloth-halls,' of which there were two in Leeds. No cloth-worker could bring his wares to those halls unless he had served the regular apprenticeship. As a rule, journeymen were hired by the year, and besides board, lodging, and washing at their master's, had each an annual wage of £8 to £10. During a stagnation of trade, it was not customary to dismiss the journeymen, and losses were equalized all over the trade.

This system was entirely changed by machinery. The rich merchants became manufacturers, and erected mills. As early as 1720, according to a report of a committee of the house of commons 1757, the custom of assessing the wages by the justices appears to have fallen into disuse, a neglect which led to reduction of wages by the masters, and to combinations by the workmen. An act of 1725 prohibited such combinations, and by an act of 1726 justices were enjoined to fix the rate of wages. In consequence of a petition from the masters, the justices did not comply with the act of 1726. A riot among the weavers ensued, which involved losses estimated at £15,000 to £16,000. In 1756, the justices were by another act re-ordered to settle the wages in the woolen manufactures yearly. Permanent trade societies were not formed among the woolen workmen till that manufacture passed from the domestic to the factory system, when the masters began to set at naught the provisions of the 5th Eliz., and to employ in their mills workers who had served no apprenticeship, as also a large number of women and children, whose labor was much cheaper. The cloth-workers at Halifax, both small masters and journeymen, finding their bread taken from them, formed a Union or 'Institution,' as it was then called, 1796. Acts of parliament were passed 1799 and 1800 suppressing this Institution, and severely prohibiting all combinations of workmen; the effect of which was only to make the workmen combine under the cloak of Friendly Societies (q.v.). In response to a petition from the master manufacturers of w. and n. England, the 5th Eliz. c. 4, and all previous enactments of like nature were, by act of parliament 1803, suspended for one year in the woolen manufacture. This suspension was renewed in the next and following years, till in 1809 these laws were finally repealed. The workers again formed an 'Institution' in 1803, which spent £10,000 to £12,000 on petitions to parliament. The master manufacturers, finding that the Institution aimed at maintaining the 5th Eliz., required their workmen to leave that body, and on their refusing to do so, discharged them. On the repeal 1809 of the 5th Eliz. and previous acts to the same effect, combinations among workmen became chronic.

Of earlier date than the Cloth-workers Institution was the Shipwrights of Liverpool Trade Soc., and still earlier was that of the Hatters, who were specially protected by the 5th Eliz., 8th Eliz., and 1st James I., and who now felt aggrieved at the 'sweating system' which had been introduced in their trade early in the 18th c.; as also at the excessive number of apprentices who were crowding out the journeymen. In opposition to the efforts of the Workmen's Society, the Master Hatters, 1777, petitioned parliament for repeal of the legislative restrictions in regard to the number of apprentices, and for prohibition of combinations among the workmen; both of which points were conceded, within certain limits, by the 17th George III., c. 55. An inquiry by a committee of the house of commons into the state of framework-knitting brought out the fact, that for about 20 years wages in that trade had been constantly falling, while the prices of food had been rising. Two bills (1779 and 1812) for regulation of their trade having been rejected, the framework-knitters entered into a Union 1814. In calico-printing, the introduction of machinery affected the workmen most injuriously. In Lancashire there were 55 apprentices to 2 journeymen; in Dumbartonshire, 60 apprentices to 2 journeymen. By employing apprentices the masters saved a third in wages, and in case of work being spoiled by the boys, a proportionate deduction was always made from their wages.

Trade-unions soon spread over the kingdom, and gradually embraced nearly all the members of all the trades. Employers, on the other hand, leagued themselves into unions, and endeavored to counteract the trade societies by lock-outs and by mutual support. In 1802 was passed the 'Moral and Health Act,' called forth more immediately by the terrible epidemic fevers in n. England, especially in Manchester, resulting from the inhuman factory system there in operation. The Cotton Mills Act of 1819 limited the age of children admissible to factories to not less than nine years, and the hours of labor from the ages 9 to 16 to 12 hours a day, exclusive of meal-time, night-work being also prohibited. Lord Althorp's (better known as Earl of Shaftesbury—q.v.) Act of 1833 prohibited night-work (from 8.30 P.M. to 5.30 A.M.) to all persons under 18 years in cotton, woolen, worsted, hemp, flax, tow, and linen spinneries, and weaving-mills; and fixed the maximum hours of work from the ages 9 to 13 at 48 per week, and from the ages 13 to 18 at 69 per week. Four factory inspectors were also appointed, and invested with the penal jurisdiction of justices of the peace. In 1842, a Mining Act was passed prohibiting underground work by women in general, and by boys under 10 years, but imposing no restriction on the time of labor, nor on night-work. In 1843, the second report of the *Children*

Employment Commission brought to light a frightful state of things. The Factory Act of 1844 reduced the working time for children employed in textile industries, and the Printing Works Act of 1845 contained similar provisions. In 1847 was passed the Ten Hours Act, applying to all young persons and women; and to check a 'relay' expedient by which it was sought to elude its provisions, an act was passed 1850 reducing the legal working day for all young persons and women to 6 A.M.—6 P.M., and fixing the meal-time within these hours. Gradually all trades in Britain, and following Britain, on the continent, were brought under the protection of more humane laws, a result due in large measure, directly or indirectly, to the action of trade-unions.

The organization of trades in Great Britain is now very thorough. The following table shows the numerical strength of several leading unions in the United Kingdom at the close of 1891: the returns are approximately correct, though not official.

Agricultural Laborers	15,000
Bakers	4,500
Boiler Makers and Iron Ship Builders	36,000
Boot and Shoe Riveters	5,000
" " " " (Nat'l)	33,000
Bricklayers	12,700
Carpenters and Joiners	30,000
Chemical Workers	10,000
Compositors (London)	9,250
Dock, Wharf, etc., Laborers	40,000
Engineers	70,000
Gasworkers and General Laborers	60,000
House Decorators and Painters	8,300
Iron Founders	15,000
Iron Molders (Scotland)	6,300
London and S. Cos. Labor League	13,000
Miners (Northumberland)	16,000
" (Durham)	40,000
National Miners' Federat'n	150,000
Operative Cotton Spinners	19,300
Power-loom Weavers	60,000
Railway Servants	35,000
Railway Workers' Union	20,000
Sailors and Firemen	78,000
Stone-masons	12,500
Tailors (Amalgamated)	19,200

In the United States, the first T.-U. was organized in New York 1803—the 'Journeymen Shipwrights' Soc.,' and the next appears to have been the 'House Carpenters' Soc.' of New York, 1806. A printers' union existed in New York 1817, and was incorporated 1818. Thurlow Weed (q.v.) visited Albany to procure its incorporation by the legislature. In his *Autobiography* he writes: 'I remember with what deference I then ventured into the presence of distinguished members of the legislature, and how sharply I was rebuked by two gentlemen, who were quite shocked at the idea of incorporating journeymen mechanics.' In Boston, Philadelphia, and other cities the organization of trade-unions came much later. As early as 1825 the project of a national organization of several trades was mooted, yet the unions continued local till 1852, when the 'National Typographical Union' was founded—later (1869) styled the 'International Typographical Union,' to signify its inclusion of the Canadian craftsmen. Other local unions followed the example of the printers, first the Hatters, 1854; then the Machinists and Blacksmiths, who formed an 'International Union of N. America' 1859; and the same year saw the institution of the 'National Founders' League,' later reorganized as the 'Iron Moulders' International Union of N. America;'

and these and other unions of workers in iron not long afterward combined to form the powerful organization known as the 'Amalgamated Assoc. of Iron and Steel Workers of the United States.' The 'Brotherhood of Locomotive Engineers' arose 1864. As early as 1860, 26 trades were organized nationally. Since then, nearly all handicrafts have formed organizations coextensive with the country. In these unions, whether local or general, the special interests of the several trades alone were regarded as ends; and their common law, so to speak, took no cognizance of questions concerning the welfare of craftsmen or workingmen in general: political questions were ruled out of order; *a fortiori* projects savoring of 'socialism' or 'paternalism in govt.' had no chance of obtaining a hearing in the unions. But in 1860 in the congress of the unions of Machinists and Blacksmiths a resolution was offered and received with some favor, proposing the shortening of daily labor to 8 hours. A convention of representatives of trade-unions, Philadelphia, 1861, Feb. 22, deliberated on the state of the country in view of the then impending civil war. The 'National Labor Union' (union of craftsmen belonging to all trades) was formed 1865 in a convention at which such questions as the 8-hour day, the national currency, the national debt, the public lands, etc., were discussed. But organized labor was not yet ready to combine for promotion of these objects, and the National Labor Union had a brief life. But it is worthy of note that at that convention of workingmen the establishing of a national labor bureau was first publicly advocated. The first fruit of this general organization of the trades was the enactment by congress of the 8-hour labor law, 1868, Jan. 25, by which it was declared that '8 hours shall constitute a day's work for all laborers, workmen, and mechanics who may be employed by or on behalf of the govt. of the United States.' To the National Labor Union succeeded the 'Industrial Brotherhood,' another short-lived organization which came into existence 1874, Apr., at an Industrial Congress, Rochester, N. Y. The Industrial Brotherhood was the first general organization of trades to overstep the limits of skilled crafts and to invite to fellowship 'mechanics and *other laborers*.' The order of the Knights of Labor (see LABOR, KNIGHTS OF) was definitively constituted 1869, Dec. 28: at its annual convention, Toledo, O., 1891, Nov., the membership of this order was reported 200,000. The 'Federation of Labor' was organized 1881: this body was reported by its pres., Samuel Gompers, to comprise (1891) 74 unions (local, national, and international), with membership of 675,117. The Federation is not as close a union of trades and industries as is the order of the Knights of Labor: indeed the bond which holds to it some of the unions that make up its strength is of the feeblest kind, and merely nominal. Thus, it is not to be supposed that the Brotherhood of Locomotive Engineers is in any degree controlled or directed by or subordinate to the Federation of Labor.

The position of the trade-unionist may thus be stated.

The capitalist's accumulations afford him an advantage which the laborer without association does not possess: the funds of the union are intended to supply this deficiency. As accessories, the unions collect funds for other purposes, e.g., benefit societies, insurance of tools, libraries, and reading rooms; but their trade objects are those with which we are here especially concerned. The following means of assisting and defending the trades associated are enumerated by the committee as now in general use: 1. Publishing periodically the state of the trade in different parts of the country; 2. Keeping registers of men unemployed and of employers wanting men; 3. Assisting men from town to town in search of employment; 4. Regulating the number of apprentices in the trade; 5. Maintaining men in resistance to employers; 6. Regulating number of working-hours, and preparing trade rules; 7. Organizing strikes.

The advocates of the unions insist that they are the only means by which workmen can defend themselves against the aggression of employers. It is urged that associations of employers are practically universal, and that their object is mainly to secure for themselves the largest possible share of the profits which are the product of capital and labor united. It is said further, that in the event of any depression of trade, the employers invariably attempt to reduce wages; and that when trade improves, they defer as long as possible the restoration of the former rate. Thus, workmen are the first to feel commercial disaster, and the last to benefit by better times. That in both these matters there is a constant gravitation against the workman seems admitted by most who have considered the subject; and there is difficulty in suggesting any effective resistance to the downward tendency, except that of combination. Trade-unionists point to many regulations in the interests of workmen which combination has enabled them to introduce, and while they freely admit that in many instances the contest between labor and capital has resulted in the apparent defeat of labor, yet they assert that, in the long-run, most of the points contended for have been gained. They maintain that, in very many trades, they have succeeded in preventing abuses, and that the unions have contributed, more than any other agency, to make 'the workman's life regular, even, and safe.' Bitter prejudices against trade-unions were created in the minds of the general public, and long maintained by accounts published of occasional cases, on the part of trade-unionists, of coercion, intimidation, rattening, and picketing. But to-day the struggle of workingmen for their rights is usually conducted without serious disturbance of the public peace, without violence or bloodshed.

The ancient common law left little freedom of combination to workmen for regulating wages, shortening the hours of labor, or otherwise bettering their condition. In England, the boasted freedom of our Saxon ancestors was very similar to that in the southern states of N. America before the secession war, since it was all enjoyed by the upper class, to whom the inferior persons were slaves; and the term freeman, still used in certain Brit. municipalities, of old distinguished those who were not slaves. The statutes of labor still retained a portion of this servitude, laying heavy penalties on workers in various trades who refused to work at a regular fixed remuneration—often, of course, below the market value, otherwise it would not require to be protected by penalties. By the Poor Law Act, too, those who would not work might be veritably enslaved by being compelled to labor in the service of any householder. It may be said, indeed, to have been the last stage of the emancipation of the working-classes from slavery when the Combination Act was repealed 1825. This act, which, after all, was a mild relic of the old laws for coercing workmen, subjected those who, whether verbally or in writing, entered into combinations for keeping up the wages of their labor, or limiting the hours of work, to be punished by imprisonment as criminals. There is no doubt that, in defiance of this act, secret combinations were held, which were more dangerous and cruel than any that have occurred since the repealing act of 1825, which rendered combination itself lawful, but punished any attempts to enforce the views of the combining workmen by violence or intimidation. But in England to-day, under the various Trade-union Acts, employers and employed may lawfully do in combination all that they would be entitled to do as individuals. In the United States, too, the ancient rigor of the common law and the statutes has been much relaxed, and the tendency is toward a further thorough revision of existing codes, and bodies of law, in favor particularly of the workmen. Yet it is still the law of Mass. that a combination of workmen to raise their wages, and to enforce by overt acts a schedule of prices of labor, is a criminal conspiracy. N. Y. and Penn. were the first states to redress by law the grievances of the workmen. In N. Y. by act of 1870, labor-unions are declared lawful, as is also any peaceful combination in a trade or calling to increase or maintain a scale of wages; but if workmen combine to raise their wages by conspiring *to compel other workmen* to conform to rules established by the conspirators for the purpose of regulating the price of labor, they are indictable for conspiracy. The Penn. act of 1872 also declares trade-unions lawful; it provides that laborers, etc., as individuals, or as members of a society, may lawfully refuse to work for any employer when, in their opinion, the wages are inadequate, or the treatment received from employers is brutal or offensive, or when the continued labor of such workmen would be 'contrary to the rules, regulations, or by-laws of any club' etc., to which the workmen may belong.—A very formidable strike was made on the principal railroad lines of the United States 1877, precipitated by a 10 per cent. reduction of wages. It was begun by the 'train hands' of the Baltimore and Ohio r.r., July 14, and eventually spread so as to involve 6,000–7,000 m. of road and 100,000 railroad men. The coal-miners of Penn. engaged (to the number, as reported, of 40,000) in a general strike at the same time. At Pittsburgh, Penn., the strikers defied the civil authorities and the militia was called out; militiamen and U. S. troops guarded railroad property in several states. At Pittsburgh the militia fired several volleys into the mob of strikers July 21. The mob then sacked gun-shops and warehouses and made an attack on the troops with small arms and 3 small cannons. Foiled in their effort to dislodge the military, the mob set fire to an oil train and pushed the blazing train toward the roundhouse in which the military were. The retreat of the militia to Alleghany City arsenal was harassed in every way. Incendiarism reigned 24 hours in Pittsburgh, and the railroad companies lost in property destroyed $8,000,000—$10,000,000, including more than 2,000 freight-cars with their contents burned. This strike gained no definite result, though a few special concessions in details were secured; but its general effect was to show each side the formidable character of its opponent—thus suggesting the desirableness of a mode of settling differences by some method less disastrous to both sides. The riots at Baltimore also were very serious: in one conflict with the militia 9 strikers were killed and 20 wounded: there were also conflicts between the strikers and the troops at St. Louis, Buffalo, and Chicago. Order was restored and trains were again running on most of the roads before the end of July.—Of labor-strikes in very recent years, that of the dock laborers in London 1889 was on many accounts among the most memorable. The dock laborers 'went out' in the middle of August. To coerce the dock companies to accede to the demands of the men, various unions struck in sympathy—first the stevedores and lightermen, then other organized and unorganized trades, as tailors, bakers, gas men, printers, metal workers: before the end of Aug. 150,000 workers were idle, and commerce was blocked. The leader of the strike was John Burns, and the men had the sympathy of all London and received material aid from all over the world. Cardinal Manning was throughout the strike a mediator and peacemaker. The companies were obliged to concede the demands of the dockers. The cost of the strike to all parties was not less than $10,000,000.—See COMPETITION: LABOR: FACTORY: FACTORY ACTS: INTERNATIONAL, THE: BOYCOTTING: MACHINERY, POLITICAL ECONOMY OF: TRADE SCHOOL.

TRADITION, n. *tră-dĭsh'ŭn* [F. *tradition*, tradition—from L. *traditiō* or *traditiōnem*, a delivering up—from *trado*, I deliver, I transmit—from *trans*, across; *do*, I give]: the transmission of events, doctrines, opinions, rites, etc., from father to son. through successive generations, by word of mouth; that which is so handed down (see RULE OF FAITH: INFALLIBILITY): old custom: PLU. things or deeds preserved only in the memories of successive generations, and not committed to writing. **TRADI'TIONAL**, a. *-ăl*, transmitted by word of mouth only; received by tradition; in *OE.*, observant of traditions. **TRADI'TIONALLY**, ad. *-ăl-lĭ*. **TRADI'TIONARY**, a. *-ėr-ĭ*, derived from tradition; transmitted from age to age without writing. **Tradi'tionary**, n., or **Tradi'tionist**, n. *-ist*, one who acknowledges the authority of tradition. **Tradi'tionarily**, ad. *-ér-ĭ-lĭ*. **Traditive**, a. *trăd'ĭ-tĭv*, transmitted or transmissible from age to age by oral communication; traditional.

TRADITOR, n. *trăd'ĭ-tĕr* [L. *traditor*, a traitor—from *tradĕrĕ*, to give up—from *trans*, across; *do*, I give]: *literally*, a traitor; hence, among the *early Christians*, a name of infamy applied to those who delivered their Scriptures, etc., to their persecutors to save their lives.

TRADUCE, v. *tră-dūs'* [L. *traducĕrĕ*, to lead across, to disgrace—from *trans*, across; *duco*, I lead or bring]: to misrepresent and abuse; to calumniate; to defame; in *OE.*, to propagate; to translate, as from a foreign tongue; to display; to lead astray. **Tradu'cian**, *-dū'shan*, a believer in traducianism. **Tradu'cianism**, the theory or doctrine that the soul as well as the body is propagated and not created. The origin of this theory is ascribed to Tertullian (q.v.), who explains and defends it in his book *On the Soul*, written after he had lapsed into the Montanist heresy. In opposition to others who had held the theory of the pre-existence of souls—of which pre-existing souls one is divinely infused, or, by some natural affinity, is attracted into each fetus so soon as it has been formed by generation in the procreation of man—Tertullian taught that souls are propagated by souls as bodies by bodies, and by the same or a simultaneous process. In another place he describes this origin of soul from soul as generation, and even of a class analogous to corporeal generation; and this more gross and material exposition of the theory of T. is sometimes called *Generationism*, which, however, is commonly classed as a totally distinct theory. A third hypothesis as to the origin of the soul suggested that, in the propagation of the human species, whenever a human body is formed by generation, the soul which is to animate that body is created, and by divine power infused into it. This theory is called *Creationism* (q.v.). Creationism is maintained by the argument that it accords with the scriptural distinction in origin between man's body and soul—the body being referred to the formation of materials from the earth, the soul being referred to the direct inbreathing of life from God: also by the argument that it accords with the indivisibility of the soul as a spiritual essence, while T. requires the division of a soul in the act of generating out of itself another soul. Inasmuch as T. is maintained by the argument that it is necessary to account for the transmission of a sinful nature from Adam to the whole race as his posterity (i.e., by community of essence), the advocates of creationism reply that the Lord Jesus, as sharing with man in the same community of essence, would thereby be a sharer in the human sinfulness of nature, which in fact he was not.—We may be content to say of this mystery, with St. Augustine, 'How the soul derives its being, I do not know.' It is possible that there may be a truth in both theories; for it is at least conceivable that the *body* is generated corporeally (traducianism), while the *spirit* or life-principle is given directly from God (creationism); whereupon by the instant and continuous close interaction of these two constituent elements of humanity, the *soul* arises as the personality of the individual man—recipient at once of the Divine life from God through the man's spirit, and of various human characters and tendencies by heritage from parentage through the body.—See Anthropology: Descent of Man: Heredity: etc.—The discussion of these theories in the 4th and 5th c. was much promoted by the controversies on Manichæism: see Manichean.—Tradu'cing, imp. Traduced', pp. *-dŭst'*. Traduce'ment, n. censure; obloquy. Tradu'cingly, ad. *-lĭ*. Tradu'cer, n. *-sėr*, one who traduces. Tradu'cent, n. *-sĕnt*, slandering. Traduc'tion, n. *-dŭk'shŭn*, in *OE.*, derivation from one of the same kind; propagation; conveyance. Traduc'tive, a. *-dŭk'tĭv*, derivable; that may be deduced.—Syn. of 'traduce': to vilify; defame; disparage; depreciate; decry; slander; calumniate; detract; censure.

TRAFALGAR, *tra-fâl'gėr*, or *trâ-fâl-gâr'*, Cape: low promontory on the s. coast of Spain, about 29 m. w.n.w. of Tarifa (q.v.), on the Straits of Gibraltar. It is memorable for the great naval victory (1805, Oct. 21) by the British fleet under Nelson, over the combined fleets of France and Spain under the French commander Villeneuve and two Spanish admirals. The British force consisted of 27 sail of the line, 4 frigates, 1 schooner, and 1 cutter; the force of the French and Spaniards united amounted to 33 sail of the line, 5 frigates, and 2 brigs. The largest of the French and Spanish ships carried 30 guns more than the largest of the British ships. The engagement resulting in a splendid victory for the British (who captured 19 ships) was gained at the cost of the life of the greatest of English admirals: see Nelson.

TRAFFIC, n. *trăf'fĭk* [F. *trafiquer*, to traffic—said to be derived from L. *trans.* across, and *vices*, exchange: more probably of Celtic origin; Lang. *tráfi*, disturbance, trouble; W. *trafu*, to stir, to agitate]: interchange of goods, etc., between countries, communities, or individuals; commerce; trade; goods or persons passing to and fro along a road, railway, or canal: V. to buy and sell goods; to trade; to carry on commerce; to trade meanly or mercenarily. Traf'ficking, imp.: Adj. bargaining; dealing; jobbing: N. the act of buying and selling goods. Traf'ficked, pp. *-fĭkt*. Traf'ficker, n. *-fĭk-ėr*, one who trafficks; a trader; one who deals meanly or mercenarily.

TRAGACANTH, n. *trăg'ă-kănth* [L. *tragacan'thum*—from Gr. *tragos*, a goat; *akan'tha*, a thorn]: the concrete juice or gum of several species of shrubby or herbaceous plants, usually in the form of white or yellowish semi-transparent flakes, of great toughness; the *Astrag'ălus vērus*, ord. *Leguminōsæ*, sub-ord. *Papilionācēæ*, found in Asia Minor and Persia, seems to be the chief source of the European tragacanth (see Bassorine: Gum).

TRAGEDY, n. *trăj'ĕ-dĭ* [F. *tragédie*, a tragedy—from L. *tragœdĭa;* Gr. *tragōdĭa*, a tragedy—from *tragos*, a goat; *ōdē*, a song: so called because the actors of the early tragedies were dressed in goat-skins, or because a goat was the prize in the tragic contests]: a dramatic poem representing an event, or a series of events, in the life of an individual, generally having a fatal issue, and meant to impress on the mind some great moral truth (see DRAMA); the muse of tragedy: any event in which human lives are lost by murderous violence; a fatal and mournful event. **TRAGEDIAN**, n. *tră-jē'dĭ-ăn*, a writer or an actor of tragedy. **TRAGE'DIENNE'**, n. *-dĭ-ĕn'* or *tră-zhā'dĭ-ĕn'* [F. *tragédienne*]: female actor of tragedy. **TRAGIC**, a. *trăj'ĭk*, or **TRAG'ICAL**, a. *-ĭ-kăl* [F. *tragique*—from L. *tragĭcus;* Gr. *tragĭkos*, tragic]: of or relating to or of the nature of tragedy; expressive of or resembling tragedy; fatal; calamitous. **TRAG'ICALLY**, ad. *-lĭ*. **TRAG'ICALNESS**, n. *-nĕs*, the quality of being tragical; mournfulness. **TRAGI-COMEDY**, n. *trăj'ĭ-kŏm'ĕ-dĭ*, a dramatic piece having serious and comic scenes blended, and the issue not fatal or unhappy. **TRAG'I-COM'IC** or **-COM'ICAL**, pert. to tragi-comedy. **TRAG'I-COM'ICALLY**, ad. *-lĭ*.

TRAGICUS: see under TRAGUS.

TRAGOPAN, n. *trăg'ō-păn* [Gr. *tragos*, a goat]: oriental bird of the *Phasianidæ* or pheasant family, having the head crested, but naked on the cheeks and around the eyes; a horn-like caruncle projecting backward from behind each eye, and a loose wattle, capable of being inflated, hanging beneath the bill. The tarsi are armed with a blunt spur in the male, unarmed in the female. The T. is a native of Asia, and is a bird of beautiful plumage, somewhat resembling a pheasant. The species *Ceriornis satyrus* has been called the *Horned Pheasant:* it inhabits the higher parts of the Himalaya, Tibet, and some mountainous provinces of China. It is thought that the T. might profitably be domesticated in Europe and America.

TRAGUS, n. *trā'gŭs* [Gr. *tragos*, a goat]: in *anat.*, the small cartilaginous eminence at the entrance of the external ear, often beset with hair like the beard of a goat, hence the name. **TRAGICUS**, n. *trăj'ĭ-kŭs*, a short, flattened band of vertical muscular fibres on the outer surface of the tragus.

TRAIL, n. *trāl* [Sp. *trailla*, a drag for levelling ground: Dut. *treylen*, to drag a vessel by a rope: mid. L. *tragŭla*, a sledge—from *trahĕrĕ*, to draw: comp. Gael. *triall*, a journey]: anything drawn to length or behind, as the train of a gown; that part of the stock of a gun-carriage which rests on the ground when the piece is unlimbered; the marks or scent left by any animal by which it may be pursued the track followed by a hunter: V. to hunt by tracking; to draw along the ground or behind; to draw; to drag; to be drawn out in length. **TRAIL'ING**, imp.: ADJ. drawing along the ground; floating, dragging, or waving. **TRAILED**, pp. *trāld*. **TRAIL'ER**, n. *-ėr*, one who or that which trails or requires support, as a plant. **TRAIL-NET**, a drag-net.

T-RAIL, n. *tē-rāl:* railway rail in the form of a T, having two flanges above, for giving a wide tread for the rolling-stock.

TRAIL, n. *trāl* [contr. of ENTRAIL]: entrails of certain birds, as of a snipe or woodcock.

TRAIN, n. *trān* [OF. *trahin;* F. *train*, a train—from mid. L. *trahinārĕ*, to drag—from L. *trahĕrĕ*, to draw]: that which is drawn along behind; the long part of a dress behind; the tail of a bird; the after-part of a gun-carriage; a number of followers or attendants; a retinue; a regular method; a course; a series or succession, as of ideas; a state of procedure; orderly company; a procession; a line of gunpowder laid to fire a charge; on a *railway*, a number of carriages or cars drawn by an engine; in *OE.*, a stratagem; a trap: V. to draw; to form by instruction and practice; to educate and bring up; to break or tame for use; to form to any practice by exercise; to cause to assume a proper shape in growth, as a tree: to point a large gun in a particular direction; in *OE.*, to draw along; to invite; to allure; entice; to draw by artifice or stratagem; to draw from act to act by inducements. TRAIN'ING, imp. teaching and forming by practice: N. process of teaching or forming by practice; operation or art of forming young trees to a wall or espalier: preparation of men for athletic exercises, or horses for running a race (see below): disciplining of troops. TRAINED, pp. *trānd:* ADJ. having a train; brought up or reared by practice. TRAIN'ABLE, a. *-ă-bl*, capable of being trained. TRAIN'ER, n. *-ér*, one who trains—generally restricted to one who prepares another for the performance of feats requiring certain physical qualities, as a horse for racing, or a pugilist for a prize-fight. TO TRAIN UP, to educate by teaching and practice. TRAIN OF ARTILLERY, a number of large guns, mortars, etc. TRAIN-BAND (properly, trained band), formerly, a band or company of militia. The train-bands of London were chiefly composed of apprentices; and their unruly doings formed the subject for many facetious plays and tales. In the civil wars the train-bands sided with the parliament; and Charles II. restored the militia on its old local footing. TRAIN-BEARER, one who holds up the train of a distinguished person. TRAINING SCHOOL, a school in which pupils are trained for a particular pursuit or object; in Britain, school in which teachers are educated; a training college (see NORMAL SCHOOL). RAILWAY TRAIN, a line of carriages or trucks, or both, drawn by an engine and tender on a railway. DOWN-TRAIN, in *Britain*, a train which runs from the capital to the provinces. UP-TRAIN, in *Britain*, a train which runs from the provinces to the capital. THROUGH-TRAIN, a train which runs from terminus to terminus, or from one system on to another without change of carriages.

TRAIN, *trān*, GEORGE FRANCIS, author: b. Boston, 1829, Mar. 24. He was engaged for many years in commercial business in Boston and in Australia; undertook to establish street railroads in England, in Birkenhead and London, 1859; made several trips around the world and lectured extensively on almost every conceivable subject; and has long been noted for his eccentricities. He has published numerous works and addresses.

TRAIN'ING, in an Athletic and Sporting Sense: preparation for athletic exercises or for some special line of bodily activity—implying the acquisition of vigorous health. The term is applied in reference to men, horses, and dogs. A person is said to be trained 'in condition,' when he has by certain processes rendered his frame as fit as it is possible for it to be, for performing some feat of strength or endurance—e.g., a trial of speed, a rowing match, a wrestling match, or any other prolonged exertion. For such purposes, the T. is often long and severe. It being necessary to divest the muscles of every particle of fatty tissue which can possibly be spared without direct injury to the health, it often happens that many pounds of flesh must be lost; and severe and continued exertion is necessary—the body being wrapped in thick suits of flannels, denominated 'sweaters.' Rigid abstinence also is requisite in certain departments of diet; e.g., no matter how thirsty the person in training may be, after perhaps ten miles' rapid walking in a triple suit of sweaters, he is allowed to drink only very sparingly, for though he may have taken off pounds of flesh by profuse perspiration, one glass of ale might undo the whole effect. Great attention to diet is necessary. Indeed, much of the system has been aptly expressed as consisting in the resolute performance of the three cardinal virtues—temperance, soberness, and chastity.—Almost the same course is pursued in training animals; and whether for hunting or racing, horses and dogs have to submit to a course of T. to bring them into 'condition.' The Turkish bath, as a means of procuring the necessary reduction of flesh without excessive labor, has been found an efficient ally. Out of 'condition,' the muscles are flabby, confused and coated with fat; the skin dead and lifeless; the eye dull and heavy; the lungs laboring, and the movements slow. In 'condition,' the muscles stand out hard, clear and defined; the tendons show like cords; the skin is clear, and ruddy; the eye bright; the lungs play with unrestrained freedom; and the whole frame is endued with vigor and perfect activity. See Maclaren's *Training in Theory and Practice*.

TRAIN-OIL, n. *trān'oyl* [Dan. and Sw. *tran;* Ger. *thran;* Dut. *traan*, train-oil]: an oil obtained from the fat or blubber of the whale.

TRAIT, n. *trāt* or *trā* [F. *trait*, feature—from L. *tractus*, pp. of *trahĕrĕ*, to draw]: a line; a stroke or touch; a feature, or peculiar feature, as of character.

TRAITOR, n. *trā'tėr* [OF. *traĭtor;* F. *traître*, a traitor—from L. *tradĭtor*, a traitor; *tradĕrĕ*, to betray—from *trans*, across; *do*, I give]: one who abandons a cause which he was bound to defend, as of his sovereign or country; one guilty of treason; one who betrays his trust. **TRAI'TORLY**, a. *-lĭ*, in *OE.*, treacherous; perfidious. **TRAI'TOROUS**, a. *-ŭs*, guilty of treason: treacherous; perfidious. **TRAI'TOROUSLY**, ad. *-lĭ*. **TRAI'TOROUSNESS**, n. *-nĕs*, the quality of being traitorous; treachery; also **TRAI'TORISM**, n. *-ĭzm*. **TRAI'TRESS**, n. *-trĕs*, a woman who betrays her country or her trust.

TRAJAN, *trā'jan* (Marcus Ulpius Trajanus, *mâr'kŭs ŭl'pĭ-ŭs tra-jā'nŭs*): fourteenth Roman emperor: prob. A.D. 53–117, July (reigned 98–117); b. Italica (Alcala), near Seville (Spain); of a family probably of Roman origin. He was early trained to arms, becoming a prominently successful leader in the Parthian and German campaigns, during the reigns of Titus and Domitian. He was rewarded for his soldierly services by promotion to the offices of pretor and consul (91), and was ultimately adopted (97) by Nerva (q.v.) as his colleague and successor. T. became sole ruler 98, Jan., and celebrated his accession by the largess (somewhat less than usual) to the soldiers, but extended by him to the Roman citizens also and their children; and he made large provision out of the imperial treasury for rearing the children of poor freemen in Rome and other Italian towns, with the view of encouraging increase of population. In 101, Rome for the first time beheld its emperor leading forth his legions in person on a career of conquest, when T. set out on his first campaign against the Dacians who had exacted tribute from Rome since Domitian's time. The struggle was long and destructive: the emperor's opponents were valiant warriors, and headed by an able leader, their monarch, Decebalus; but the Romans at last gained decisive superiority; and in a subsequent campaign (104–5) completely subdued their opponents, whose country thenceforth became the Roman province of Dacia, and was secured by partial colonization. This conquest, the first since the death of Augustus, was celebrated, on T.'s return to Rome, by a superb triumph, and by games on a most extensive scale, which continued for four months. In the arena 10,000 gladiators contended, and 11,000 beasts were killed. Thirst for dominion again impelled T. to the east in 106. Landing in Syria, he marched n., received on his way the submission of numerous princes, possessed himself of Armenia, which he made a province of his empire, and hugely gratified the Roman senate with long lists of monarchs, never before heard of, who had bowed to their sway. The record of the events of the next seven years of T.'s reign is extremely defective, the few notices in Dion Cassius and others being insufficient for a consecutive narrative. In 115, he again set out from Syria, directing his march against the degenerate Parthian empire; took Ctesiphon almost without a struggle; and descending the Tigris, and subduing the tribes on both banks, became the first and only Roman general who navigated the Persian Gulf. On his return, he found that, like the bent reed which recovers its position when relieved from pressure, the peoples of Mesopotamia, n. Syria, and Arabia required to be again and more thoroughly subdued. This being done, and Parthia again conquered, T., sinking under a combination of dropsy and paralysis, which had long afflicted him, attempted to reach Italy, but was overtaken by death at Selinus, in Cilicia. Though most of T.'s reign was spent in gratification of his warlike ambition, the internal administration was careful, thorough, and sensible; the administration of justice was vigorous and impartial;

that of finance was equally acceptable; informers (*delatores*) were severely punished, and peculating governors of provinces rigorously prosecuted. The improvement and beautifying of Rome—favorite occupation of the emperors—was carried on: the empire was traversed in all directions by new military routes, canals and bridges were constructed, new towns built, the Via Appia was restored, the Pontine Marshes partially drained, the magnificent 'Forum Trajani' erected, and the harbor of Centum Cellæ (Civita Vecchia) constructed. T. was one of the great historical road-makers.—Even if there were not abundant evidence of the sincere desire of T. to increase the comfort and happiness of his subjects, the customary wish formally uttered on the occasion of an emperor's accession, that he might be 'happier than Augustus, better than Trajan' (*Augusto felicior, Trajano melior*), would suffice for proof. In his personal character, T., a born soldier, was singularly simple, sincere, frank, and courageous. He, as also his admirable wife Plotina, detested pomp. He returned, almost ostentatiously, to the old republican simplicity in his own habits and in his imperial procedure—making himself freely accessible to his subjects and to his soldiers. He made his soldiers his comrades; yet it was known that no military detail escaped the emperor's eye, and that the least violation of discipline would meet unwavering justice. Pliny praises T. as the great military law-giver and the founder of discipline in the Roman army. His popularity with his soldiers and with the citizens was unbounded.—During T.'s reign, there was a mild persecution of the Christians; and taking into account that T. naturally shared the general belief that Christianity was a novel and perilous species of fanaticism, his conduct toward it may perhaps be almost deemed moderation.

TRA'JAN'S COLUMN: celebrated column at Rome, reared A.D. 114 by the Roman senate and people, in honor of Emperor Trajan. It is considered not only the greatest work of its architect, Apollodorus, but one of the noblest structures of its kind ever erected. The pedestal is covered with bas-reliefs of warlike instruments, shields, and helmets; and a very remarkable series of bas-reliefs, forming a spiral round the shaft, exhibits a continuous history of the military achievements of Trajan. These are in excellent preservation, and, independently of their beauty as works of art, they are invaluable records of ancient costume. A spiral staircase in the interior of the column leads to its summit. The height of the entire column is 132 ft. It still stands erect in all its ancient beauty amid the ruins of Trajan's forum. The summit was originally crowned by a colossal statue of the emperor, which has been incongruously replaced by one of the apostle Peter.

TRA'JAN'S WALL: line of fortifications stretching across the Dobrudscha from Czernavoda, where the Danube bends n., to a point on the Black Sea coast near Kustendji. It consists of a double, in some places triple, line of ramparts of earth, 8½ to 11 ft. in height on the average (occasionally of 19½ ft.), bounded along its n. side by a valley, which, being generally marshy, and abounding in small lakes and pools, serves admirably the purpose of a fosse. This valley was long erroneously supposed to have been at one time the channel by which the Danube emptied; and a scheme for utilizing it by construction of a canal to provide a more commodious water-communication with the Black Sea, instead of the long and troublesome navigation by the Sulina mouth, has been frequently mooted, and is undoubtedly practicable; but the cost has hitherto been a bar to its execution. During the war of 1854 Trajan's Wall became an important line of defense on the invasion of the Dobrudscha by the Russians; and the invaders were twice defeated in attempts to pass it—at Kostelli (Apr. 10) and Czernavoda (Apr. 20–22).

TRAJECT, v. *trä-jĕkt′* [L. *trajectus*, thrown over or across—from *trans*, over; *jactus*, pp. of *jacĕrĕ*, to throw]: to throw or cast through: N. *trăj′ĕkt*, in *OE.*, a ferry; passage for water-carriage. TRAJECT′ING, imp. TRAJECT′ED, pp. TRAJEC′TION, n. *-jĕk′shŭn*, a throwing or casting over; transportation. TRAJEC′TIVE, a. *-tĭv*, in *gram.*, applied to a verb which governs the dative. TRAJEC′TORY, n. *-tėr-ĭ*, in *math.*, the curve or path which a body describes when projected into space and continuously acted on by constant or varying forces: thus, the trajectory of a body projected obliquely for a little distance above the earth is approximately a parabola (it would be accurately so were space void and the centre of gravity of the earth infinitely distant); and the trajectories of the planets are approximately ellipses (see PROJECTILES, THEORY OF). A trajectory in mathematics is any plane curve which cuts at a given angle a series of plane curves of the same species and having a common origin.

TRALEE, *tra-lē′*: seaport and borough of Ireland, chief town of the county Kerry; on the river Lee, about a mile from the point at which it enters the sea; 162 m. w.s.w. from Dublin. The origin of T. was due to the building of a castle, and the foundation of a Dominican convent by the Geraldine family, 1213; and somewhat later a considerable house of the order of Templars was established. The town is well built and has many public buildings. There is large traffic in grain and agricultural produce; annual exports amounting to £200,000, imports to about £150,000. There is a ship-canal, by which vessels discharge their cargoes close to the town.—Pop. (1871) 9,506; (1881) 9,396; (1891) 9,318—mostly Rom. Catholics.

TRALL, *trawl*, RUSSELL THACHER: physician: 1812, Aug. 5—1877, Sep. 23; b. Vernon, Conn. He studied medicine, and 1840 began its practice in New York, but soon substituted a water-cure treatment for that by drugs, and 1843 opened an establishment for this treatment. In 1853 he founded the New York Hygeio-Therapeutic College, a medical school for men and women, subsequently removed to Florence, N. J. He was the editor of the *Hydropathic Review*, and author of many works advancing his views on this subject.

TRALUCENT, TRALUCENCY: OE. forms of TRANSLUCENT, TRANSLUCENCY.

TRAM, n. *trăm* [prov. Eng. *tram*, a kind of coal-wagon: Low Ger. *traam*, the handle of a wheel-barrow: OHG. *tram*, a beam]: the shaft of a cart, wheel-barrow, or the like; a coal-wagon; one of the rails or tracks of a tram-road; *familiarly*, a tramway-car. **TRAM'ROAD** or **-WAY**, a road prepared for easy transit of carriages or wagons by forming wheel-tracks of smooth beams of wood, blocks of stone, or plates of iron (the earliest form of railway). Also, grooved iron rails laid in a public street or road, in which the flanged wheels of tramway-cars, called in the United States street-cars, may run smoothly; a street railway: this form of railway originated in the United States.

TRAM, n. *trăm* [L. *trama*, weft]: double silk thread in which two or more singles are twisted together in a direction contrary to the twist of the singles—used only as weft (see SILK).

TRAMA, n. *trā'mă* [L. *trāma*, the woof or filling of a web]: in *bot.*, the central tissue of the lamellæ of gill-bearing fungi.

TRAMMEL, n. *trăm'mĕl* [It. *tramaglio;* Sp. *trasmallo;* F. *tramail*, a fishing-net of two or three layers—from L. *trans*, through, or more probably *tres*, three; *macŭla*, the mesh of a net]: a kind of long net, called a Trammel-net (q.v.); a shackle, especially one of a kind used in teaching horses to amble; anything that hampers or confines; an impediment; an instr. for drawing circles, curves, and ovals: V. to confine or restrain; to hamper; to shackle. **TRAM'MELLING**, imp. **TRAM'MELLED**, pp. *-mĕld*.

TRAM'MEL-NET: kind of net resembling the drift-net used in the Herring-fishery (q.v.), but anchored and buoyed at each end, the back-rope supported by small cork-floats, and the foot-rope kept close to the ground by weights. The length varies from 60 to 900 ft. A variety of trammel-net, used chiefly in w. England and in Guernsey, consists of three long nets fastened together at top, bottom, and ends; called in parts of Cornwall a *tumbling-net.*

TRAMONTANA, n. *trâ-mŏn-tâ'na* [It.]: a common name given to the north wind in the Mediterranean.—The name is also applied to a peculiar cold and blighting wind in the Archipelago.

TRAMONTANE, a. *tră-mŏn'tān* or *trăm'ŏn-tān* [It. *tramontano*, beyond the mountains—from L. *trans*, beyond; *mons* or *montem*, a mountain]: lying or being beyond the mountains—that is, the Alps—originally used by the Italians; hence, foreign; barbarous: N. one living beyond the mountains.

TRAMP, v. *trămp* [nasalized form of Ger. *trapp, trapp*, representing the sound of the footfall: Low Ger. and Ger. *trampen*, *trampeln*, to stamp: Dut. *trappen;* Sw. *trampa*, to trample]: to tread under foot; to travel over on foot; to wander about on foot: N. the sound of walking, as the *tramp* of feet; a walk or journey; a stroller; a workman of the lower class, journeying on foot from place to place in search of employment: a vagrant; a beggar (see VAGRANTS: BEGGAR: POOR, THE). **TRAMP'ING**, imp. **TRAMPED**, pp. *trŭmpt*. **TRAMP'ER**, n. *-ér*, one who tramps; a vagrant. **TRAMPLE**, v. *trămp'l*, to tread under foot; to tread down; to treat with contempt and insult; to tread with force and rapidity: N. a treading under foot with contempt. **TRAMP'LING**, imp. *-ling:* ADJ. moving regularly and more or less loudly. **TRAMPLED**, pp. *trămp'ld*, trodden under foot. **TRAMP'LER**, n. *-lér*, one who tramples.

TRAM-ROAD or **-WAY**: see under TRAM.

TRANCE, n., or **TRANSE**, n. *trăns* [OF. *transi*, fallen into a swoon: F. *transe*, a swoon: It. *transire*, to pass over, to fall into a swoon: L. *transitus*, a passing over; *transīrĕ*, to pass over—from *trans*, across; *īrĕ*, to go]: a state of the body in which the soul seems to be rapt in visions; a total suspension for a time of sensation and voluntary motion, while the heart and lungs continue to act; a state of extreme surprise or terror: V. to entrance; to charm. **TRAN'CING**, imp. **TRANCED**, pp. *trănst*, being or lying in a trance. **TRANCEDLY**, ad. *trăns'ĕd-lĭ*, in the manner of one in a trance.—*Trance*, or 'morbid sleep,' differs from natural repose in duration; in profound insensibility to external impressions; in occurring after excitement and the exaltation of certain instincts, chiefly the religious and amative, rather than after fatigue or exhaustion; and in being the concomitant or symptom of diseases of the nervous system. The attitude, aspect, lowered respiration, and circulation of the entranced resemble those of the sleeper. But there are many exceptions to this observation. A girl who remained dormant 13 years, though she grew from a child to a woman in that time, was corpse-like in appearance, had locked-jaw, and there was almost total suspension of the signs of life. But while a person cannot be roused from this condition by the most powerful stimulants, by an electric shock, or even, it is affirmed, by a surgical operation, thought or dream goes on uninterruptedly, and is more continuous and coherent in character than in ordinary sleep. So connected and real do these visions appear to the ecstatic that they are generally accepted as true events, revelations, or impressions, received during a brief visit to another world. T. has occurred epidemically during periods of great religious fervor or of superstition; and whole classes of persons are described as having preached while asleep, in the insurrection of the Cevennes (q.v.). A similar phenomenon was observed 1865 in those affected by hysteromania at Morzine, in Savoy. T. has been divided, according to the intensity of the symptoms, into (1) *Death-trance*, where neither the heart nor lungs act; where the temperature of the body falls; where no sustenance is taken, and the inner dream-life is the only vestige of vitality. Engelbrecht, who was subject to T., wrote a book descriptive of this inner life, during which he believed himself to be transported to supernatural, if not to celestial, regions. (2) *Trance-coma*, where the breathing and action of the heart are feeble, but perceptible; the joints flexible; but where the external senses are not awake, and where the patient cannot be roused. (3) *Trance-sleep*, where, except in the insensibility to external stimuli, and in the length of the suspension of volition, little abnormal is noticed. As these states often succeed hysteria, nervous and other diseases, the bodies of the supposed dead are for a time, in certain countries, so placed as to be watched, and in circumstances favorable to resuscitation; and they should be so dealt with always: see DEATH.—See Mayo, *On the Truths contained in Popular Superstitions;* Figuier, *Histoire du Merveilleux.*—See SLEEP: CATALEPSY: HYSTERIA: HYPNOTISM.

TRANI, *trâ'nē:* maritime city of s. Italy, in the province Terra di Bari; 25 m. n.w. of Bari. It is surrounded by a wall with towers and moats, and entered by three gates. T. is an archbishop's see, and has a handsome cathedral, convents, a court of appeal, a theatre, and a strong castle. The streets are wide, well built, and paved with flag-stones. There is a handsome square. There is considerable trade in oil, wine, corn, and cotton, which last is also manufactured here.

T. comes into notice first when it submitted to the Normans 1053: it was then the chief town of a vast county, and was an important harbor in the time of the Crusades. Under the kingdom of Italy it has again begun to prosper, and promises to become an emporium of the commerce of the Levant, as in the middle ages.—Pop. (1881) 25,173.

TRANK, n. *trăngk* [etym. doubt.]: in *glove-mak.*, an oblong piece from which the shape of the glove is cut on a knife in a press.

TRANNEL, n. *trăn'nĕl:* a treenail: see under TREE.

TRANQUEBAR, *trăng-kwē-bâr'* (corruption of *Tallangambadi*): seaport-town on the e. coast of Brit. India, 155 m. s. of Madras. It stands on a small bay, and is backed by a well-wooded and cultivated country; is a healthful station, much cooler than Madras, and has therefore been made a convalescent depot. The town is surrounded by walls with bastions, and is further protected by the fort of Dansborg. The territory of T. has 15 sq. m.; and produces rice, the cocoa-nut and other palms, the mango, and a variety of fruits. The town has much declined from its former commercial importance. The territory belonged in the 17th century to the Danes, was taken by the British 1807, restored 7 years later, but finally passed by purchase into the hands of the British 1845.—Pop. of town about 25,000.

TRANQUIL, a. *trăn'kwĭl* [F. *tranquille*—from L. *tranquillus*, calm, serene: It. *tranquillo*]: free from strife or agitation; calm; peaceful; quiet; undisturbed. TRAN'QUILLY, ad. *-lĭ*. TRANQUILLITY, n. *trăn-kwĭl'lĭ-tĭ*, freedom from disturbance or agitation; a calm state; quietness. TRANQUILLIZE, v. *trăn'kwĭl-īz*, to quiet; to calm or soothe; to allay agitation. TRAN'QUILLIZING, imp. TRAN'QUILLIZED, pp. *-īzd*. TRAN'QUILLIZINGLY, ad. *-zing-lĭ*. TRAN'QUILLIZER, n. *-ī-zėr*, one who or that which tranquillizes.

Tran'quilliza'tion, n. *-zā'shŭn,* the act of soothing or state of being soothed or calm.—Syn. of 'tranquillize': to calm; soothe; still; compose; appease; quiet; pacify.

TRANS-, *trăns:* a Latin prefix which, with its form **Tra**, signifies across; over; beyond; through; completely; from one to another; complete change, as *Trans*atlantic, *trans*fuse, *trans*mute, etc.

TRANSACT, v. *trăns-ăkt'* [L. *transactus,* carried through, settled—from *trans,* through; *actus,* pp. of *agĕrĕ,* to drive]: to carry through; to complete; to perform; to manage, as business; to conduct matters. **Transact'ing**, imp. **Transact'ed**, pp. **Transac'tion**, n. *-ăk'shŭn* [F.—L.]: the management of any affair; the performing of any business; that which is done; a proceeding; a process. **Transac'tor**, n. *-tėr,* one who transacts.

TRANSALPINE, a. *trăns-ăl'pīn* [L. *trans,* across, and Eng. *Alpine*]: beyond the Alps, in regard to Rome—viz., on the north of the Alps; opposite of *Cisalpine.*

TRANSATLANTIC, a. *trăns'ăt-lăn'tĭk* [L. *trans,* across, and *Atlantic*]: beyond or across the Atlantic, as *Transatlantic* countries, a *Transatlantic* steamer.

TRANSCALENT, a. *trăns-kā'lĕnt* [L. *trans,* across; *calens,* being warm; *calĕrĕ,* to be warm]: permitting the passage of heat. **Transca'lency**, n. *-lĕn-sĭ,* the state of being transcalent.

TRANSCAUCASIA, *trăns-kaw-kā'shĭ-a:* that portion of Caucasia proper which lies s. of the Caucasus (q.v.), the portion to the n. being called *Ciscaucasia.* T. comprises 8 governments: chief town, Tiflis.

TRANSCEND, v. *trăn-sĕnd'* [L. *transcendĕrĕ,* to climb or pass over—from *trans,* beyond; *scando,* I climb]: to rise above; to go beyond; to surmount; to surpass; outdo; excel. **Transcend'ing**, imp.: Adj. rising above; surpassing. **Transcend'ed**, pp. **Transcend'ent**, a. *-ĕnt* [L. *transcendens* or *transcenden'tem,* climbing over]: very excellent; supremely excellent: among the *Schoolmen,* not included in one of the ten Categories (q.v.): in the philosophy of Kant (q.v.), transcending experience, as the idea of God. **Transcend'ently**, ad. *-lĭ.* **Transcend'ence**, n: *-ĕns,* or **Transcend'ency**, n. *-ĕn-sĭ,* superior excellence; supereminence. **Transcendental**, a. *trăn'sĕn-dĕnt'ăl,* supereminent; applied by Kant to the various forms, categories, or ideas which are regarded to be native elements of human thought, and which are manifested in experience only, though they are not products of experience, as Time, Space, etc.; metaphysical; hence, abstruse; extravagant; absurd. **Tran'scendent'ally**, ad. *-lĭ.* **Tran'scendent'alism**, n. *-ăl-ĭzm,* that system of philosophic inquiry which is identified with the name of Kant, and in which the primary principles of knowledge are ascertained *a priori* (see **Transcendental**); that kind of investigation or use of language which is vague, obscure, or extravagant. **Tran'scendent'alist**, n. one who believes in or adheres to transcendentalism.—Syn. of 'transcend': to exceed; outgo; outstrip; excel; surpass; surmount.

TRANSCENDEN'TAL — TRANSCEND'ENT [see TRANSCEND]:employed by various Schoolmen, particularly by Duns Scotus (q.v.). to describe the conceptions that, by their universality, rise above or transcend the ten Aristotelian Categories (see CATEGORIES). Thus, according to Scotus, *Ens*, or Being, because it is predicable of Substance and Accident alike, of God as well as of the World, is raised above these by including or comprehending them; it has the same relation to the sum of the Categories as the *summum genus* to the various genera within a single category—Relation (*summum genus*) to the classes of Related things (included genera). Further, the predicates assumed by Scotus to belong to *Ens*, or simple existence—viz., the One, the True, the Good—*Unum*, *Verum*, *Bonum*—are styled transcendent, because applicable to *Ens* before the *descent* is made to the ten classes of real existence.—In later times, since Kant, the word 'Transcendental' has been largely used as equivalent to the philosophical meaning of *a priori*. See COMMON SENSE, THE PHILOSOPHY OF: INSTINCT.

Between the hitherto convertible terms Transcendental and Transcendent, Kant himself drew a distinction, of considerable importance in understanding his own system. By the word 'Transcendental' he designates the various forms, categories, or ideas assumed to be native elements of human thought; implying that, though they are not products of Experience, they are manifested only in experience; such are Space and Time, Causality, etc. The word 'Transcendent' Kant reserves for those among the transcendental or *a priori* elements that altogether transcend experience. They may seem to be given in experience, but they are not really given. Such are the 'Ideas of the Pure Reason,' God, an Immaterial Soul, etc. Transcendental elements, when legitimately applied to experience, as Causality and Relation, are called Immanent.

TRANSCRIBE, v. *trăn-skrīb'* [L. *transcrībĕrĕ*, to transfer in writing—from *trans*, over; *scrībo*, I write]: to write over again, or in the same words; to copy. TRANSCRI'BING, imp. TRANSCRIBED', pp. *-skrībd'*. TRANSCRI'BER, n. *-bėr*, one who transcribes. TRANSCRIPTION, n. *trăn-skrĭp'shŭn* [F.—L.]: the act of copying; the copy made; in *music*, the adaptation of a composition for a particular instrument. TRANSCRIPT, n. *trăn'skrĭpt* [L. *scriptus*, written]: a copy; anything written from and according to an original; TRANSCRIP'TIVE, a. *-tĭv*, relating to or being a copy. TRANSCRIP'TIVELY, ad. *-lĭ*.

TRANSE, *trăns:* the old and proper spelling of TRANCE (q.v.).

TRANSED, a. *trănst:* OE. for ENTRANCED.

TRANSEPT, n. *trăn'sĕpt* [L. *trans*, across; *septum*, a fence, an inclosure]: the portion of a cruciform church between the nave and the choir, which projects at right angles to the body, forming the arms of the cross.

TRANSFER, v. *trăns-fėr'* [L. *transfer'rĕ*, to transport—from *trans*, over; *fero*, I bear or carry]: to convey from one place or person to another; to make over; to convey, as a right from one to another; to sell; to convey (a writing, drawing, or the like) from one surface to another by means of transfer-paper, as to a lithographic stone. **TRANSFER**, n. *trăns'fėr*, the conveyance of a thing from one place or person to another; the conveyance of a right, title, or property from one person to another; the placing or conveyance from one position, place, or condition into another; the reversed mark or impression made on a lithographic stone. **TRANSFER'RING**, imp.: N. the act of conveying from one to another, as a right or property. **TRANSFERRED'**, pp. *-fėrd'*. **TRANSFER'RER**, n. *-rėr*, one who transfers. **TRANSFER'ABLE**, a. *-fėr'ă-bl*, or **TRANSFER'RIBLE**, a. *-rĭ-bl*, that may be conveyed from one to another; negotiable, as a bill of exchange. **TRANSFER'ABIL'ITY**, n. *-bĭl'ĭ-tĭ*, or **TRANSFER'RIBIL'ITY**, n. quality of being transferable. **TRANSFEREE**, n. *trăns-fėr-ē'*, the person to whom a thing is transferred. **TRANS'FERENCE**, n. *-ĕns*, the act of conveying from one to another; the passage of a thing from one place to another; in the *law of Scotland*, the step by which a pending suit is transferred from a person deceased to his representative. **TRANSFER-BOOK**, a register of transfers of shares or stocks. **TRANSFER-DAYS**, the days on which stock can be sold out or transferred at the Bank of England. **TRANSFER-PAPER**, prepared paper on which lithographers impress, write, or draw their designs, from which they are impressed or put upon the stone, and then printed from; fine unsized paper on which copies of recently written letters are impressed by the copying-machine.—SYN. of 'transfer, v.': to remove; transport; alienate: estrange; sequester; sell; deliver.

TRANSFIGURE, v. *trăns-fĭg'ūr* or *-fĭg'ėr* [F. *transfigurer*, to transfigure—from L. *transfig'ūrārĕ*—from *trans*, over, from one to another; *figūra*, form, shape]: to change the appearance or outward form of; to transform; to glorify. **TRANSFIG'URING**, imp. **TRANSFIG'URED**, pp. *-fĭg'ėrd*, changed as to outward form. **TRANSFIG'URA'TION**, n. *-ū-rā'shŭn* [F.—L.]: change of form; with the definite article, the supernatural change in the personal appearance of our Lord on the Mount, described in Matt. xvii. 1–9.

TRANSFIX, v. *trăns-fĭks'* [L. *transfix'us*, transfixed—from *trans*, through; *fixus*, pp. of *figo*, I fasten]: to pierce through, as with a pointed weapon. **TRANSFIX'ING**, imp. **TRANSFIXED'**, pp. *-fĭkst'*. **TRANSFIX'ION**, n. *-fĭk'shŭn*, the act of transfixing or state of being transfixed.

TRANSFORM, v. *trăns-fawrm'* [L. *trans*, across; *forma*, a shape]: to change the shape or appearance of; to change, as one substance into another; to change the heart or natural disposition; to be changed in form or substance. **TRANSFORM'ING**, imp.: ADJ. able to effect a change of form or state. **TRANSFORMED'**, pp. *-fawrmd'*, changed; renewed. **TRANSFORMATION**, n. *trăns'fŏr-mā'shŭn*, act of changing, or state of being changed; metamorphosis; a change of heart or disposition. **Transformative**, a. *trăns-fawrm'ă-tiv*, having power or a tendency to transform.

TRANSFUSE, v. *trăns-fūz'* [F. *transfuser*, to transfuse—from L. *trans*, through; *fūsus*, pp. of *fundĕrĕ*, to pour]: to transfer by pouring; to transfer, as blood, from one living animal to another; to cause to be instilled or imbibed, as love of country. **Transfu'sing**, imp. **Transfused'**, pp. *-fūzd'*. **Transfu'sible**, a. *-fū'zi-bl*, that may be transfused. **Transfusion**, n. *trăns-fū'zhŭn* [F.—L.]: the introduction of the blood of one living animal into the vessels of another. Since 1824, when Dr. Blundell published *Physiological and Pathological Researches*, this has been a recognized and legitimate operation in obstetric surgery. It seems to have been known to the medical profession for the last four centuries; and there are obscure allusions in the Roman poets, which may indicate that it was practiced as early as the Augustan age:

> Ut repleam vacuas juvenili sanguine venas.
> *Ovid.*

The earliest authentic case on record is, so far as we know, that of Pope Innocent VIII., who was unsuccessfully operated on in 1492. The experiment was tried three times, and at the cost of the lives of three boys, probably from air getting into their veins, but without any effect in saving that of the pope. Denys of Montpellier, 1667, June, injected the blood of calves into the veins of a young man who had been much weakened, and had become torpid and slightly dropsical, in consequence of repeated bleedings. The first operation restored him to perfect health. In Nov. of the same year, Lower, of Oxford, publicly made a similar experiment, which seems to have been successful. Other instances of the operation are on record; but it soon fell into obscurity, doubtless from lack of success, due partly to use of the blood of calves and sheep, instead of human blood, and partly to hopeless cases of old age and decrepitude being selected for its application.

At the present day, transfusion of blood is largely restricted to cases of profuse hemorrhage in connection with labor—its benefits being probably twofold: 1, the actual restitution of blood which has been lost; 2, the supply of sufficient blood to the heart to stimulate it to contraction, and thus to enable the circulation to be carried on until fresh blood is formed. Its stimulant action is probably much the most important; and if the operation is performed before the vital energies are entirely exhausted, the effect is most marked, and indeed may be said to be almost unfailing. The operation has proved successful also in a case of coma from the fumes of carbonic oxide and carbonic acid. Blundell was in error in believing that the blood of animals of the same species was essential, Dr. Brown-Séquard having since shown that the blood of various animals can be used indiscriminately, provided only certain precautions are taken; and the important discovery has been made by Panum that defibrinated blood is in every respect as well suited for the operation as pure blood. T. of B. has been suggested in cases of cattle-disease. As it would be impossible, without danger, to bring a healthy animal in contact with a diseased one, the value of Panum's discovery, provided the proposed remedy be successful, is obvious; for the blood of healthy oxen killed for the market could be defibrinated by whipping and straining, and would remain for many hours fit for injection. when raised to the normal temperature.

'The cases suitable for the operation,' says Dr. Playfair, 'are those in which the patient is reduced to an extreme state of exhaustion from hemorrhage during or after labor or miscarriage. The operation will not come into contemplation until other and simpler means have been tried and failed, and when the symptoms indicate that life is on the verge of extinction.' The value of the operation in suitable cases is proved by statistical evidence. One physician has recorded 36 cases, in 29 of which the patients were rescued from an apparently hopeless state; and out of 57 cases recorded by Prof. Martins, of Berlin, 43 were entirely successful, and 7 temporarily so. The blood to be injected should be taken from the arm of a strong and healthy man who can spare a sufficient quantity, since a change of persons leads to delay, which should be avoided. Usually four to six ounces of blood are sufficient, but more may be required. For details of the mode of the operation, see Dr. Playfair's *Handbook of Obstetric Operations*.

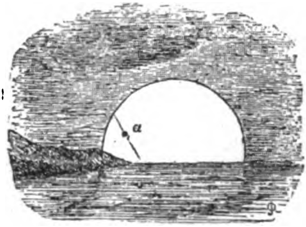
TRANSGANGETIC, a. *trăns'găn-jĕt'ĭk* [L. *trans*, across, beyond: *Ganges*, the great river of Hindustan]: connected with the countries beyond the Ganges; on the opposite side of the Ganges.

TRANSGRESS, v. *trăns-grĕs'* [F. *transgresser*, to transgress—from L. *transgressus*, pp. of *transgredior*, I step over—from *trans*, across; *gradior*, I step]: to pass over or beyond a limit; to break or violate; to offend by the violation of a command; to infringe; to sin. **Transgres'sing**, imp. **Transgressed'**, pp. *-grĕst'*. **Transgress'or**, n. *-sėr*, one who transgresses; an offender. **Transgres'sion**, n. *-grĕsh'ŭn* [F.—L.]: the act of violating any law or rule of moral duty; a fault; a crime; a sin. **Transgres'sional**, a *-ăl*, involving transgression. **Transgres'sive**, a. *-grĕs'sĭv*, faulty; apt to transgress; consisting in transgression. **Transgress'ively**, ad. *-lĭ*.—Syn. of 'transgression': crime; misdemeanor; misdeed; fault; offense; infringement; affront; violation; wrong; iniquity; wickedness; injustice; injury.

TRANSHIP, v. *trăns-shĭp'* [L. *trans*, over, and Eng. *ship*]: to convey from one ship or conveyance to another. **Tranship'ment**, n. the act of transferring goods from one ship or conveyance to another.

TRANSIENT, a. *trăn'shĕnt* or *-sĭ-ĕnt* [L. *transiens* or *transien'tem*, going or passing over; *transīrĕ*, to pass over —from *trans*, across; *īrĕ*, to go]: passing; of short duration; soon passed; fleeting; momentary. **Tran'siently**, ad. *-lĭ*. **Tran'sience**, n. *-shĕns*. **Tran'siency**, n. *-sĭ*. or **Tran'sientness**, n. *-nĕs*, the state of being transient; shortness of continuance.

TRANSIT, n. *trăns'ĭt* [L. *transĭtus*, a passing over; *transīrĕ*, to pass over—from *trans*, over; *īrĕ*, to go: It. *transito*]: a passing over or through; conveyance; the passing of a heavenly body over the disk or face of another one, as the *transit* of Venus (across the face of the sun); the daily passage of a star across the meridian of a place. **Transition**, n. *trăn-zĭsh'ŭn* [F.—L.]: passage from one place or state to another; change; in *music*, a passing from one key to another; in *geol.*, a passage from one state or period to another: Adj. noting change from one condition or state to another. **Transi'tional**, a. *-ŭn-ăl*, or **Transi'tionary**, a. *-ėr-ĭ*, pertaining to or denoting transition. **Transitive**, a. *trăns'ĭ-tĭv*, having the power of passing; in *gram.*, denoting a verb whose action passes over to, or which has an effect upon, a noun or pronoun. **Trans'itively**, ad. *-lĭ*. **Trans'itiveness**, n. *-nĕs*, the state or quality of being transitive. **Transit-instrument**, an astronomical instr., of which a telescope forms an essential part, and by which the exact moment of a heavenly body's transit across the meridian of the place of observation is ascertained (see below). **Transit duty**, duty charged on goods in transit. **Transition rocks or strata**, in *geol.*, the strata that were deposited at a period when the earth and sea were passing into a state fit for the reception of organized being; the metamorphic strata. **Trans'itory**, a. *-ĭ-tėr-ĭ*, passing without continuance; uncertain in duration; speedily vanishing; fleeting; temporary; short-lived. **Trans'itorily**, ad. *-lĭ*. **Trans'itoriness**, n. *-nĕs*, a passing with a short continuance.



Transit of Mercury:
a, Mercury. The dotted line shows the path.

TRANS'IT-INSTRUMENT: important astronomical instrument, consisting of a telescope fixed to a horizontal axis, so as to revolve in the plane of the meridian; and employed in the observation of the meridian transits of the heavenly bodies. The axis, the most important part of the instrument, and thus demanding the utmost care in its construction, consists of a hollow sphere or cube, to opposite sides of which are tightly fastened the bases of two cones in whose apices the pivots are screwed; the sphere or cube is pierced for the admission of the telescope, which is firmly soldered at right angles to the axis. One of the pivots is hollowed so that a stream of light can be directed from a lantern half-way along the interior of the axis, and through an aperture in the side, into the telescope tube, where, being received by an annular mirror, set at 45° to the axis and telescope tube, it is directed to the eye-piece, and brilliantly illumines the field of view, while the annular form of the mirror prevents any interference with the passage of rays from the object under observation to the eye. The pivots must be very carefully turned to a perfectly cylindrical form, and fitted into the instrument so that their axes are accurately in line. One extremity of the axis carries one and sometimes two small graduated circles, each supplied with index, clamping screws, and vernier; these circles are capable of indicating angular measures to within 1′ or 2′. The pivots rest on massive blocks of stone or other stable material which is little effected by change of temperature, stability being the great mechanical essential of the instrument. This condition satisfied, there are three adjustments necessary before a transit can be observed: the axis must be horizontal; the line of collimation must be at right angles to the axis of motion; and the latter must be placed to point accurately east and west. On the perfection of the first two of these adjustments depends whether the telescope sweeps over a great circle of the sphere, and the third is necessary to insure that this great circle shall be the meridian of the place of observation. These adjustments can never be made quite perfect, and the usual mode is to investigate the amount of error in each, and allow for it in the apparent result. To note accurately the instant of time by the astronomical clock, at which the object (e.g., a star) is seen to pass the centre of the field of view, is the essential part of a transit observation. The most effective method is to register the beats of the clock by an apparatus which, at the end of each oscillation of the pendulum, marks a dot upon a uniformly moving slip of paper. This is effected by the agency of electricity, and is one of the most valuable contributions of electrical to astronomical science. At a certain point in each oscillation of the pendulum, it becomes part of a complete galvanic circuit, the contact being immediately broken by its progression in its oscillation; and it is at these points that the galvanic agency causes the dot to be made. The instant of a transit's occurrence is similarly noted by the observer, who, by a tap on a break-circuit key fastened to the side of the transit-instrument, causes the graver to make an extra dot; and the distance of this dot from the previous seconds dot, compared with the distance between two seconds dots, gives the time accurately almost to one-hundredth of a second. Various ingenious modes of registering have been proposed, all founded on the above principles. It is from the times of transit of the several heavenly bodies thus observed, that their right ascensions are determined.

The transit-instrument was invented by Römer about 1690. One was erected in Greenwich Observatory by Halley 1721, but it was little used till 1742.—See Circle, Mural.

TRANSKEI TERRITORY, *trăns-kē´:* dependency of the Cape Colony, between the Great Kei river (which is the boundary of Brit. Kaffraria) and the borders of Natal. Covering most of what was known formerly as Kaffraria (q.v.) proper, the T. T. is now divided into Griqualand East, Tembuland, and Transkei in the stricter sense—the latter comprising Fingoland, the Idutwya Reserve, and Gcalekaland. The last independent portion, Pondoland, was annexed 1884.—See CAPE OF GOOD HOPE.

TRANSLATE, v. *trăns-lāt´* [OF. *translater*—from L. *translātus*, carried or brought over, transferred—from *trans*, over; *lātus*, carried: It. *translatare*]: to carry or remove from one place to another; to remove from one see or pastoral charge to another, as a bishop or clergyman; to convey; to remove or convey to heaven without death (e.g., Enoch and Elijah); to change into another form; to transform; to render into another language; to interpret. **TRANSLA´TING**, imp. **TRANSLA´TED**, pp. **TRANSLA´TOR**, n. *-tėr*, one who expresses the sense of words in one language by those of another; an instrument for converting one form of energy into another; a sensitive receiving-instrument used by telegraphers for retransmitting a message or for translation; a 'relay.' **TRANSLA´TABLE**, a. *-tă-bl*, that may be expressed in the words of another language. **TRANSLA´TION**, n. *-shŭn* [F.—L.]: change or removal from one place to another, as a bishop; the removal of a person to heaven without tasting death; the act of expressing the words of one language by the words of another; interpretation; a version. **TRANSLA´TIVE**, a. *-tĭv*, taken from others. **TRANSLA´TORY**, a. *-tėr-ĭ*, transferring; serving to convey or change. **TRANSLA´TRESS**, n. *-trĕs*, a woman who translates.

TRANSLEITHANIA, *trăns-lī-tâ´nĕ-a:* name of the part of Austro-Hungary e. of the Leitha river; comprising Hungary proper, Transylvania, Croatia, and Slavonia.—See CISLEITHANIA.

TRANSLITERATE, v. *trăns-lĭt´ėr-āt* [L. *trans*, across, beyond; *litĕra*, a letter]: to express the words of one language, such as Arabic, Sanskrit, or Chinese, by the letters or characters of another, as to *transliterate* Japanese words by spelling with English letters. **TRANSLIT´ERATING**, imp. **TRANSLIT´ERATED**, pp. **TRANSLIT´ERA´TION**, n. *-ā´shŭn*, the act of rendering the characters of one language by the letters of another.

TRANSLUCENT, a. *trăns-lô´sĕnt* [L. *translūcens* or *translūcen´tem*, shining through; *translucĕrĕ*, to shine through—from *trans*, through; *lucĕrĕ*, to shine—from *lux* or *lūcem*, light]: transmitting rays of light, but not in sufficient quantity to permit objects to be seen through it, as a *translucent* mineral; semi-transparent; in *poetry*, pellucid; clear; transparent. **TRANSLU´CENTLY**, ad. *-lĭ*. **TRANSLU´CENCE**, n. *-sĕns*, or **TRANSLU´CENCY**, n. *-sĕn-sĭ*, that property of certain minerals and other substances which permits light to pass through them, but not in sufficient quantity to show distinctly the forms and colors of objects placed on their other side. **TRANSLU´CID**, a. *-sĭd*, semi-transparent; clear.

TRANSMARINE, a. *trăns'mă-rēn'* [L. *trans*, beyond, and *mărīnus*, of or belonging to the sea—from *mărĕ*, the sea]: beyond the sea.

TRANSMIGRATE, v. *trăns'mĭ-grāt* [L. *transmigrātus*, removed across—from *trans*, beyond; *migrātus*, pp. of *migrārĕ*, to remove]: to pass over or into another country; to emigrate; to pass from one body into another, and become incarnate in it, as the soul. Trans'migrating, imp. Trans'migrated, pp. Trans'migrator, n. *-grā-tėr*, one who transmigrates. Trans'migra'tion, n. *-grā'shŭn*, the passing of persons from one country to another for the purpose of residence; the passing of a thing into another state; the passage of the soul into another body after death; metempsychosis (see Transmigration of Souls). Transmigratory, a. *trăns-mī'grā-tėr-ĭ*, passing from one place or state to another.

TRANSMIGRA'TION OF SOULS: supposed passing of the souls of men at death into the bodies of other persons, or into the bodies of animals; metempsychosis. The belief in such a transition is one of the most important phases in the religions of mankind. It was common to the most uncivilized and the most civilized nations; it was the object of fantastical superstition and of philosophical speculation; and it is the property of both ancient and modern times. Its basis being the assumption that the human soul does not perish with the body, it could belong to those nations only which had already conceived an idea of the immortality of the soul; but in proportion as such an idea is crude or developed, as it is founded merely on a vague fear of death and a craving for material life or on ethical grounds and a supposed causal connection between this and a future life, the doctrine of T. assumes various forms, and influences more or less the actions of men.

The lowest forms of this belief are probably those among several tribes of Africa and America, which hold that the soul, immediately after death, must look out for a new owner, and, if need be, enter even the body of an animal. Several negro tribes therefore bury their dead near the houses of their relatives, in order to enable the souls of the former to occupy the newly-born children of the latter, and the princely souls to re-enter the princely family; and until the soul is thus accommodated, milk, brandy, and food are placed on the grave of the deceased, to keep it, as it were, from starving; and sometimes holes are dug in the grave, to facilitate the soul's egress from it. In N. America, some tribes slaughter their captives to feed with their blood such souls in suspense. The negro widows of Matamba are especially afraid of the souls of their husbands, for at the death of these they immediately throw themselves into the water, to drown their husbands' souls, which otherwise, as they suppose, would cling to them. The natives of Madagascar seem to have invented a kind of artificial T.; for in the hut where a man is about to die they make a hole in the roof, in order to catch the outgoing soul, and to breathe it into the body of another man on the point of death. From these and instances of a similar kind, it appears that nations which entertain such a belief in T. assume that the souls of the deceased must continue to dwell on earth, and that one human being may be possessed of several souls. With them the final destination of the soul is a matter of comparative indifference; its transition from one body into another a mere matter of chance, devoid—apparently, at least—of any ethical principle, and therefore without any moral effect on the living, except, perhaps, that of a stolid indifference to death, as often manifested in the plantations of the W. Indies, where negroes hang themselves in the belief that their souls will migrate into other countries, and there enjoy a happier life.

Another, more poetical and more ideal, form of this belief in T. occurs in Germanic mythology, and is still entertained in parts of Germany and England. According to it, the soul, before entering its divine abode, assumes certain forms, or animates certain objects, in which it lives for a short period. Thus, it is supposed to enter some flower or tree, a rose, a vine, a plantain, a pine-tree; or to animate a butterfly, a pigeon, and sometimes also—if a person dies while enchanted or sleeping—a serpent, a weasel, or a mouse. The most popular form of these supposed transmigrations is that of a pigeon, which bird, therefore, is often represented on the oldest tombstones. When the robber Madej, for instance, under an apple-tree confessed his crimes, one apple after another, transformed into a white pigeon, flew into the air. They were the souls of the persons murdered by him; only one apple remained, because he had not yet confessed the murder of his father; but when he did so, the last apple also—the soul of his father—assuming the shape of a gray pigeon, flew after the rest.

Different from this kind of belief in T. is that based on ethical grounds. It proceeds from the theory that human souls, being of divine essence, are originally pure, but during their earthly career lose their purity; being destined, however, to regain their original quality, they are reborn again and again, until they have become free from fault, and thus worthy of re-entering the place of their origin. A belief of this nature was entertained by the old Mexicans, probably by the Druids also. It is met in more developed form with the old Egyptians; but its real importance it obtained as a tenet of the religion and philosophy of the Brahmanical Hindus and the Buddhists, whence it passed into the doctrine of several philosophers of ancient Greece, and into that of some Jewish and Christian sects. The ethical and philosophical value of such a belief is necessarily relative. It will depend on what a religion or philosophy may call right or wrong, virtue or sin; it will depend likewise on the notions which religion or philosophy may entertain on the origin of the human soul, on the cause of its first birth, and on its ultimate destination, whether this destination is the merging of the soul into the essence of its Creator, or a personal immortality; also the mode in which such a personal immortality is conceived will necessarily influence the mode in which T. is supposed to take place. Where the ideas on these questions have remained crude, the idea of T., too, has little ethical or philosophical worth. The old Mexicans imagine that the gods *Ometeuctli* and *Omecihuatl* create in heaven the soul of a child destined to be born, and that by its acts on earth it will either ascend to the abode of the highest felicity, or remain in an intermediate heaven, or fall to hell. The highest goal, in the house of the sun with the god *Huitzilopotchli*, is full of pleasure and joy, and is attained only by the souls of fallen warriors, or those who died in captivity, and women dying in childbirth. The second or intermediate heaven, cool and pleasant, but of moderate enjoyments, falls to the lot of men who are not wicked. The wicked, however, go to the abode of darkness; and in darkness consists their punishment. But those entitled to the second heaven may, if they like, return to earth to qualify themselves for the highest heaven, if such is their aspiration. Of the Druids it is told by classical writers that they believed in the immortality of the soul and in its migration after a certain period subsequent to death. Little is known of the manner in which they imagined such migrations to take place; but, to judge from their religious system, there can be no doubt that they regarded transmigrations as a means of purifying the soul and preparing it for eternal life.

According to the doctrine of the old Egyptians, the human race originated after the pure gods and spirits had left the earth—departing because the demons who inhabited the earth had revolted against them, and therefore tainted it with guilt. But, to enable the demons to purge themselves of their guilt, the gods created earthly bodies, which the demons were sentenced to animate, so that by expiations they might regain their state of original purity. And these earthly bodies, united to the demons, are the human race; their souls were therefore created at the same time as those of the gods; and human life—the connection of body and soul—is intended merely as a means of purifying the soul which had rebelled against its divine nature. All the precepts regulating the course of life are laid down by the Egyptians for this end; and the judgment passed after death, in the palace of Osiris, decides whether it has been attained or not. If it has not, the soul must return to the earth again, to renew its expiations; and according to the nature and measure of the guilt which it had contracted during its previous career, it must form a new union with a human body, or with the body of an animal, or even a plant. But if the soul is declared pure by the judge of the dead, it gradually ascends through the various regions of heaven, to the highest abodes of the gods and pure spirits, presided over by Phtah and Neith.

At the time when in *India* the dogma of T. became an integral part of the Brahmanic religion, the Hindus believed that human souls emanated from a supreme Being, which, in a state of bewilderment or forgetfulness, allowed them to become separate existences and to be born on earth. The soul, thus severed from the real source of its life, is bound to return to it, or to become merged again into that divine substance with which it was originally one; but as its nature becomes contaminated with sin through its earthly career, it must, so long as it remains in this world, endeavor to free itself from all guilt, and thus to become fit for its ultimate destiny. Religion teaches that this is done by the observance of religious rites, and a life in conformity with the precepts of the sacred books; philosophy, that the soul will be reunited with Brahma if it *understands* the true nature of the divine essence whence it comes. So long, therefore, as the soul has not attained this condition of purity, it must be born again, after the dissolution of the body to which it was allied; and the degree of its impurity at one of these various deaths determines the existence which it will assume in a subsequent life. See INDIA—*Religion and Philosophy:* UPANISHAD.

Since there can be no proof of the soul's migrations, the detail in which these are described in the religious works of the Hindus is merely fantastical, and interesting only so far as it affords a kind of standard by which, at various epochs and by different writers, the moral merit or demerit of human actions was measured in India. Thus, Manu (in the 12th book of his Code of Laws) teaches: 'A Brâhman'a who drinks spirituous liquor will migrate into the bodies of a worm, an insect, a grasshopper, a fly feeding on ordure, or some mischievous animal. A twice-born who steals (the gold of a Brâhman'a) will pass a thousand times into the bodies of spiders, snakes, and chameleons, of aquatic monsters, or of murderous bloodthirsty demons. He who violates the bed of his guru (spiritual teacher) will a hundred times migrate into the forms of grasses, of shrubs, and of creeping plants, of carnivorous animals and beasts with long teeth, or of cruel brutes. Those who inflict injury (on sentient beings) become flesh-eaters; and those who eat forbidden things, worms. . . . If a man, through covetousness, has stolen . . . grain, he becomes a rat; . . . if honey, a gadfly; if milk, a crow; if juice (of the sugar-cane or the like), a dog; if clarified butter, an ichneumon; if flesh, a vulture; . . . if oil, a cockroach;' etc. A more general doctrine of the migration of souls is based by Hindu philosophers on the assumption of the three cosmic qualities—viz., *sattwa*, i.e., purity or goodness; *rajas*, i.e., troubledness or passion; and *tamas*, i.e., darkness or sin—with which the human soul may become endued. Thus, Manu teaches that 'souls endued with the quality of *sattwa* attain the condition of deities; those having the quality of *rajas*, the condition of men; and those having the quality of *tamas*, the condition of beasts.' Each of these conditions, he continues, is—according to the acts or knowledge of the soul—threefold: the lowest, the middle, and the highest. 'The lowest embodiment of the quality *tamas* is inanimate objects, worms, insects, fish, serpents, tortoises, tame and wild beasts.' From this, the lowest of the nine conditions into which the soul migrates, Manu specifies minutely the grades higher and higher, until he ends the catalogue with the highest: 'The highest condition to which the quality of *sattwa* leads is that of the god Brahmâ, that of a creator of the world (as *Marîchi*, or another patriarch of the same rank), that of the genius of *Dharma* (virtue or right), of *Mahat*, or the intellectual principle of creation, and of *Prakr'iti*, or matter.' See SÂNKHYA. Other Hindu teachers give different details of the migrations; but since all orthodox Hindu writers agree in principle with Manu, the quotations above given suffice to illustrate the imaginary positiveness with which the doctrine of T. was propounded, as well as the fact that this doctrine rested, in India, on ethical grounds.

It has been noted above that the belief in the soul's life after the death of the body must precede the doctrine of transmigration. This belief has been supposed traceable in some hymns of the *R'igveda* (see VEDA); but aside from the fallacy in speaking of this Veda as a contemporaneous whole, the only passage adduced in proof of this important discovery fails on examination to give evidence for any conclusion whatever on the subject.

The *Buddhistic* belief in transmigration is derived from that of the Brahmanic Hindus; it agrees with the Brahmanic in principle, though differing in the imaginary detail in which it was worked out.

Like the Brahmanic Hindus, the Buddhists believe that all souls have existed from the beginning; like them, they believe in the unreality and sinfulness of the world, in the necessity of the soul's freeing itself from the bondage of this world, and in the causal connection between the actions of man in this and his condition in a subsequent life. Like the Brahmanic Hindus, they hold, therefore, that sin is the cause of T., and that by a total expiation of sin the soul ceases to be reborn and attains its final resting-place. But since this resting-place is to the Buddhists Nirvâna (q.v.), or Nonentity, whereas to Brahmanism it is Brahman, or the principle of Entity; since Buddhists reject the institution of caste, which is the social foundation of Brahmanic life; since they do not acknowledge the authority of the Vedas, and the codes based on them—the moral standard of a Buddhist must differ from that of a Brahmanic Hindu; and his ideas of reward and punishment, as reflected by his ideas of T., must likewise differ. The *detail* of the Buddhistic doctrine of T. is as fanciful as that of the Brahmanic doctrine (see BUDDHISM: LAMA). One great difference, however, separates the notions of one class of Buddhists from those of the rest, as well as from those of the Brahmanic Hindus. According to the latter, and the great mass of Buddhists, it is always the same soul which ever from its first birth reappears in its subsequent births, until it is finally liberated from T. But in the belief of the southern Buddhists, the succession of existences of a being is a succession also of souls; and each such soul, though the result of its predecessor, is not identical with it. According to this view, the body dies, and with it the soul too is 'extinguished,' leaving behind only the good and bad acts which it has performed during its life. The result of these acts now becomes the seed of a new life, and the soul of this new life is therefore the necessary product of the soul of the former life. Thus all the succeeding souls have to labor at the solution of the same problem, which began when their first ancestor entered this world; but no succeeding birth is animated by the same soul. This dogma is illustrated in their works by various similes—e.g., one lamp is kindled at another; the light of the former is not identical with that of the latter; nevertheless, without the former, the other light could not have originated. Or, a tree produces fruit; from the fruit, another tree arises, and so on; the last tree is therefore not the same tree as the first, though the fruit is the necessary cause of the last.

In Greece, the doctrine of Transmigration—or, as it was there called, *metempsychosis*—did not become the belief of the people, but was confined to the teaching of the mysteries and the tenets of philosophers, who probably derived it, directly or indirectly, from Egypt or India. According to some, Thales (q.v.) was the first Greek philosopher who propounded it; according to others, Pherecydes (q.v.), teacher of Pythagoras (q.v.); but it obtained importance in Greek philosophy first through the system of Pythagoras, who seems to have gained his knowledge of it from Egyptian sources. After him, Plato (q.v.) assigned T. a prominent place in his philosophy; and he probably was indebted to Hindu writers for his views on metempsychosis, as explained in his dialogues, especially *Phædros*. Plato's doctrine was refuted by Aristotle, but revived, in modified form, by the Neo-Platonists.

Since a belief that the consequences of the acts of man must follow their inevitable course, and can neither be averted nor stopped by the interposition of a divine power, is incompatible with a belief in the forgiving and purifying grace of God, the doctrine of T. could never gain firm ground in the religion of the Jews or of the Christians. However, in both these religions it found occasional adherents in ancient and modern times. Among the Jews, the doctrine of T.—the *Gilgul Neshamoth*—was taught in the mystical system of the *Kabbala*, which pretends to divulge the secrets of creation and of the nature of the divine and human soul, and whose principle is the same as that of Brahmanism. The souls, like all other existences of this world, it teaches, must re-enter the absolute substance whence they have emerged. But to accomplish this end, they must develop all the perfections whose germ is planted in them; and if they have not fulfilled this condition during one life, they must begin another, a third, and so onward, until they have acquired the condition which fits them for their reunion with the divine. This doctrine was shared in by rabbis of highest renown, and was held by some in connection with wildly fantastic theories, such as that souls migrate into the bodies of other men—Adam's soul migrating into David, etc. Modern Kabbalists—e.g., Isaac Lo da—have imagined that divine grace sometimes assists a soul in its career of expiation by allowing it to occupy the same body jointly with another soul, when both are to supplement each other with aid, like the blind and the lame walking in a pair. Sometimes only one of these two souls requires a supplement of virtue, which it obtains from the other soul better provided—the better-provided soul becoming then, as it were, the mother of the other soul, bearing it under her heart like a pregnant woman.

Among the early Christians, according to St. Jerome, the doctrine of T. was taught as a traditional and esoteric one, communicated to only a selected few; and Origen, like the Kabbalists, considers it as the only means of explaining some biblical traditions—e.g., that of the struggle of Jacob and Esau before their birth; and as explaining some events which (as he thinks) would throw discredit on divine justice unless they were justified by good or bad acts done in a former life. Of Christian sects, the Manicheans (q.v.) especially adhered to this belief; but the church always rejected it as a heresy.

In modern times, at least one great philosopher has advanced views of the progress of mankind involving the principle of T.—the celebrated German critic G. E. Lessing, who endeavored to establish it on metaphysical grounds. His arguments are briefly these: The soul is a simple being, capable of infinite conceptions. But being a finite being, it is not capable of such infinite conceptions at the same time; it must obtain them only gradually in an infinite succession of time. If, however, it obtain them gradually, there must be an order in which, and a degree to which, these conceptions are acquired. This order and this measure are the bodily senses. At present, the soul has of such senses five; but neither is there any ground to assume that it began with having five senses, nor is there ground to assume that it will stop with five. For, since nature never takes a leap, the soul must have gone through all the lower stages before it arrived at that which it occupies now; . . . and since nature contains many substances and powers not accessible to those senses with which it is now endued, it must be assumed that there will be future stages at which the soul will have as many senses as correspond with the powers of nature. And 'this my system' he writes in his little essay, *Dass mehr als fünf Sinne für den Menschen sein können*—in a fragmentary note discovered after his death—'this my system is certainly the oldest of all philosophical systems; for it is in reality no other than the system of the pre-existence of the soul and metempsychosis.'

TRANSMISSIBLE, a. *trăns-mĭs'sĭ-bl* [F. *transmissible*, transmissible—from L. *trans*, beyond; *missus*, pp. of *mittĕrĕ*, to send]: that may be transmitted or passed from one to another, or through a body. TRANSMIS'SIBIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being transmissible. TRANSMIS'SION, n. *-mĭsh'ŭn* [F. *transmission*—from L. *transmissiō* or *transmissiōnem*, a sending across]: the act of sending, or state of being sent, from one to another; passage through. TRANSMIS'SIVE, a. *-mĭs'sĭv*, transmitted; communicated from one to another.

TRANSMIT, v. *trăns-mĭt'* [L. *transmit'tĕrĕ*, to send across; to transmit—from *trans*, over; *mitto*, I send: F. *transmettre*]: to send from one person or place to another; pass along; hand down; to suffer to pass through. TRANSMIT'TING, imp. TRANSMIT'TED, pp. sent from one to another. TRANSMIT'TER, n. *-tėr*, one who or that which transmits. TRANSMIT'TIBLE, a. *-tĭ-bl*, that may be transmitted or sent from one to another. TRANSMIT'TANCE, n. *-tăns*, or TRANSMIT'TAL, n. *-tăl*, transmission.

TRANSMOGRIFY, v. *trăns-mŏg'rĭ-fī* [familiar slang: L. *trans*, across]: *familiarly*, to change into a different shape; to change into some other person or thing as if by magic. TRANSMOG'RIFYING, imp. TRANSMOG'RIFIED, pp. *-fīd* TRANSMOG'RIFICA'TION, n. *-fĭ-kā'shŭn*, the act of transmogrifying or state of being transmogrified.

TRANSMUTE, v. *trăns-mūt'* [L. *transmutārĕ*, to transmute—from *trans*, across; *mūto*, I change: F. *transmuer*]: to change from one nature, form, or substance into another. TRANSMU'TING, imp.: N. the act of transforming into another nature or substance. TRANSMU'TED, pp. TRANSMU'TABLE, a *-mū'tă-bl*, that may be changed into another nature or substance. TRANSMU'TABLY, ad. *-tă-blĭ*. TRANSMU'TABIL'ITY, n. *-bĭl'ĭ-tĭ*, or TRANSMU'TABLENESS, n. *-bl-nĕs*, quality of being transmutable. TRANSMUTATION, n. *trăns'mū-tā'shŭn* [F.—L.]: change into another substance, form, or nature; in *alchemy*, the transformation of the baser into the more precious metals; in *geol.*, a change from one place to another, or from one thing into another. TRANSMU'TER, n. *-tėr*, one who or that which transmutes. TRANSMU'TUAL, a. *-tū-ăl*, reciprocal.

TRANSNORMAL, a. *trăns-nŏr'măl* [L. *trans*, across, beyond; Eng. *normal*]: expressing something in excess of the normal or usual state, or beyond it; not normal in character.

TRANSOM, n. *trăn'sŏm* [L. *trans*, across; F. *sommier*, a sumpter-horse, the piece of timber called a summer (see SUMPTER: SUMMER 2): also derived by some from L. *transenna*, a rope, a noose, or from L. *transtrum*, a cross-beam, transom]: in a *ship*, a beam or timber fixed across the sternpost to strengthen the after-part and give it form: in *arch.*, a horizontal mullion or cross-bar in a window; a lintel over a door, separating it from the fan-light above: in *artillery*, one of the bars which serve to hold together the two sides or 'cheeks' of a gun carriage: in *surv.*, the vane of a cross-staff; a cross-bar of any kind.

TRANSPADANE, a. *trăns-păd'ān* [L. *transpadanus*—from *trans*, across, beyond; *Padus*, the river Po—from *Padanus*, of or belonging to the Po]: beyond the Po, as viewed from Rome. **Transpadane republic**: see **Cisalpine.**

TRANSPARENT, a. *trăns-păr'ĕnt* [F. *transparent*—from L. *trans*, through; *parens* or *paren'tem*, appearing; *parērĕ*, to appear: Sp. *transparente*]: that may be seen through; clear; limpid; opposite of *ŏpaque*. **Transpar'ently**, ad. *-lĭ*, so clearly as to be seen through. **Transpar'entness**, n. *-nĕs*, quality of being transparent. **Transparence**, n. *trăns-păr'ĕns*, or **Transpar'ency**, n. *-ĕn-sĭ*, that property of bodies which permits light to pass through them so freely that the forms, hues, and distances of objects can be distinctly seen through them; a picture painted on a semi-transparent material, and which may be seen by light passing through it; a positive photographic picture on glass, intended to be viewed by transmitted light; a slide for a magic-lantern or stereopticon.—Syn. of 'transparent': clear; pellucid; lucid; bright; limpid; diaphanous.

TRANSPICUOUS, a. *trăn'spĭk-ū-ŭs* [L. *transpiciō*, I look or see through—from *trans*, across; *speciō*, I see]: transparent; that can be seen through.

TRANSPIERCE, v. *trăns-pērs'* [L. *trans*, through; Eng. *pierce*]: to pass through; to penetrate; to permeate.

TRANSPIRE, v. *trăn-spīr'* [F. *transpirer*, to transpire—from L. *trans*, through; *spīrārĕ*, to breathe]: to emit through the pores of the skin; to be emitted; to send off in vapor; to pass off in insensible vapor; to escape from secrecy; to become public. **Transpi'ring**, imp. **Transpired'**, pp. *-spīrd'*. **Transpi'rable**, a. *-spī'ră-bl*, that may be emitted through pores. **Transpiration**, n. *trăn'spĭ-rā'shŭn* [F.—L.]: the process of passing off through the pores of the skin in the form of vapor.

TRANSPLANT, v. *trăns-plănt'* [F. *transplanter*, to transplant—from L. *trans*, across; *plantārĕ*, to plant (see **Plant**)]: to remove and plant in another place; to remove and settle in residence in another place; to remove. **Transplant'ing**, imp.: N. the act of removing, as a tree, from one situation to another. **Transplant'ed**, pp. **Transplant'er**, n. *-ĕr*, one who transplants; a machine used in the transplanting of trees. **Trans'planta'tion**, n. *-tā'shŭn* [F.—L.]: the act of removing into another soil; conveyance, as of a disease.

TRANSPLANT'ING: removal of a growing plant from one situation to another—much practiced with many kinds of cultivated plants, which are started in a hotbed, garden, or nursery, and *planted out*. Many flowers and culinary plants are generally treated in this way, as well as shrubs, and fruit and ornamental trees. It is desirable to have a ball of earth attached to the roots of trees or shrubs, though this is often neglected. It is desirable also to shade and water small plants for a few days after transplanting. Young plants are easily transplanted, as their roots, not having spread far, are raised from the ground without much injury, and this is the thing of first importance in the operation. At an advanced age, T. becomes difficult. No plant can be transplanted with safety when in flower or fruit; even if the plant lives, the flowers or fruit will almost certainly perish. Trees and shrubs ought, if possible, to be transplanted in late autumn or early spring, when vegetation is comparatively inactive.

The soil in which plants or trees are to be placed should be in a fertile condition, and by plowing and harrowing be well prepared for their reception. Small plants, as celery, tomato, and egg-plant, which are usually transplanted, could be grown as well in open land if they were given as much room as is assigned to those which are transplanted, and if they could be started sufficiently early in the season. But with many kinds of plants the latter requisite cannot be secured, and it is necessary to start the seed in hot-beds or cold frames in order to have the plants of sufficient age to produce fruit, or reach maturity, at the time desired. Cloudy days are desirable for T., but if it is necessary to do the work in fair weather it should be done toward night. Roots should be dipped in water and the plants should be set, in freshly stirred soil, soon after they are taken from the ground. The soil must be pressed firmly around the roots—a rule imperative with shrubs and trees as well as with plants. In T. trees it is of great importance to secure good roots, to trim off carefully the ends of all that are broken or mangled, and to cut back the tops in the same proportion as the roots have been curtailed. If not in a good state of fertility the ground should be enriched by well-rotted manure or commercial fertilizer The holes in which the trees are to be set should be of sufficient size to allow the roots to be spread in their natural condition, and deep enough to have the trunks stand a very little lower than they did in the Nursery (q.v.). The fine surface-soil is to be filled in carefully among the roots, and trodden down as the work proceeds. Tall trees should be supported by tying them to stakes; but it is in many respects very much better to set small rather than large trees. Mulching a circle somewhat larger than that occupied by the roots of the tree is of great advantage, particularly in dry soils. The T. of trees from the forest, or open land, is much more difficult than that of trees from the nursery, as the latter have already been removed from the seed-beds in which they were started, and thus have been forced to keep their roots more compact than those of trees which have grown in a single locality. In taking up such trees care should be given to secure good roots and to leave as much earth on them as possible. If the trees have reached much size, the use of a truck with a hoisting apparatus, made specially for the purpose, will greatly facilitate their removal.

TRANSPLENDENT, a. *trăn-splĕn'dĕnt* [L. *trans*, across, beyond; *splendens* or *splenden'tem*, shining (see SPLENDOR)]: resplendent in the highest degree. **TRANSPLEN'DENCY**, n. *-dĕn-sĭ*, exceeding splendor.

TRANSPORT, v. *trăns-pōrt′* [F. *transporter*—from L. *transportārĕ*, to convey over—from *trans*, across; *porto*, I carry: It. *transportare*]: to carry over or across; to remove from one place to another; to send or carry into banishment, as a criminal; to hurry or carry away by passion or emotion; to ravish with pleasure or ecstasy. TRANSPORT, n. *trăns′pōrt*, conveyance for baggage and stores; the men, horses, and wagons so employed; a ship employed by government in conveying troops, munitions of war, stores, etc.; rapture; ecstasy; a violent manifestation of anger or rage; an old name in Great Britain and her colonies for a convict sentenced to be carried beyond seas. TRANSPORT′ING, imp.: ADJ. bearing away the soul with pleasure; ravishing with delight. TRANSPORT′INGLY, ad. *-lĭ*. TRANSPORT′ED, pp. conveyed; ravished with delight. TRANSPORT′ABLE, .a. *-ă-bl* [F.—L.]: that may be removed or transported; incurring transportation. TRANSPORT′ABIL′ITY, n. *-ă-bĭl′ĭ-tĭ*, state of being transportable. TRANSPORTATION, n. *trăns′pŏr-tā′shŭn* [F.—L.]: the act of carrying or conveying from one place to another; conveyance; carriage; banishment for crime. TRANSPORT′AL, n. *-ăl*, the act of removing from one place to another. TRANSPORT′EDLY, ad. *-lĭ*. TRANSPORT′ER, n. *-ér*, one who transports. TRANSPORT′ANCE, n. *-ăns*, in *OE.*, conveyance; carriage; transportation.

TRANSPORT, MILITARY AND NAVAL: conveyance for troops, horses, wagons, equipment, ammunition, stores, etc.—including the animals and men, also the ships, employed in conveyance. An army is helpless without a powerful system of transport. To cross a sea, a large fleet is requisite with accommodations for horses, artillery, etc. Equally important is the T. to the army moving by land. On entering battle, infantry and cavalry usually carry three days' rations with them, and perhaps 60 rounds of ammunition. The moment these are exhausted, they become dependent on the T. department for their replenishment. The first reserves are immediately in rear. To bring up supplies from these, and to keep these reserves themselves supplied, is the duty of the commisariat dept. as regards food, and of the field-train as regards ammunition. Between the grand depot and the base, the operation is generally intrusted to the wagons and beasts of the country, driven by natives, of course under proper military control. The amount of T. requisite for a large army seems almost incredible: the lowest computation (if animal T. is used) must put one animal to four fighting-men. In addition to the T. of food and ammunition, the wounded and sick have to be carried, both from the field to the hospitals and during a march.—In the U. S. army, the T. is committed to the Quartermaster's Department (q.v.): similarly in the Brit. army; in the French army, it is under the *Intendant*, who is over all the administrative departments.

TRANSPORTA'TION, Penal: removal of criminals from one territory to another. In Great Britain T. means usually removal beyond seas, as a punishment. The practice was known to the Romans; and T. to Sicily is referred to in Cicero's charges against Verres. The legal T. of criminals began in Great Britain early in the 17th c., when convicts were sent to the Plantations in America. This practice continued, under modifications, until it was ended by the American revolution. When this method of riddance of convicts ceased, there was great alarm lest the British islands would be overrun with crime; and it was hailed as a deliverance when the govt. established a penal colony in Australia. The first convicts were conveyed thither 1787, which was the beginning of the famous colony of Sydney, or Botany Bay (q.v.). The system was at its height 1820–30; but though thousands were annually removed, crime did not decrease. It was forgotten that the predatory and fraudulent offenses are a sort of business as well as crime; and that the place of criminals removed is immediately supplied. When the criminals were sent to the antipodes, it was mistakenly supposed that they took the crime of the country with them, and that there was so much less need for precautionary measures at home. Now, for many years, the greater proportion of the class of criminals formerly transported have been retained in Brit. prisons, and liberated at the end of their punishment. This practice has been accompanied with two classes of precautionary measures—an improved police, and the reformation of juvenile delinquents; and the result has been that crime is diminished to the extent of between a third and a half. On the criminals themselves the effect of T. was proved to be hopelessly demoralizing; and in 1840 T. to New South Wales came to an end as a result of a report on the subject by a committee of the house of commons; and by a succession of statutes, sentences to penal servitude (q.v.) were substituted for sentences to T. In 1868 T. to W. Australia also wholly ceased, to the great benefit of that whole continent. Russia sends political prisoners to the desolate region of Siberia; and the practice began in France just as it was being abandoned by Great Britain.—See Convict: Ticket of Leave: Prisons—Prison Discipline.

TRANSPOSE, v. *trăns-pōz'* [F. *transposer*—from L. *trans;* F. *poser*, to place: L. *transposĭtus*, placed across—from *trans*, across; *posĭtus*, pp. of *ponĕrĕ*, to place]: to change the place or order of by putting one in the place of the other; in *alg.*, to change a term from one side of an equation to the other by changing the sign; in *gram.*, to change the natural order of words or letters; in *music*, to change the key; to write, sing, or play a piece of music in a different key: in *OE.*, to put out of the place; to remove. **Transpo'sing**, imp. **Transposed'**, pp. *-pōzd'*. **Transpo'ser**, n. *-zėr*, one who transposes. **Transpo'sal**, n. *-zăl*, a change of place or order. **Transposition**, n. *trăns'pō-zĭsh'ŭn* [F.—L.]: the changing the places of words or things; the state of being transposed or put out of one place into another; in *gram.*, a change in the natural order of words or letters; in *music*, a change in the key, either in transcription or performance. **Trans'posi'tional**, a. *-ŭn-ăl*, pertaining to or embracing transposition. **Transpositive**, a. *trăns-pŏz'ĭ-tĭv*, made by or consisting in transposition. **Transpos'itively**, ad. *-lĭ*.

TRANS-SHAPE, v. *trăns-shāp'* [L. *trans*, and Eng. *shape*]: to transform; to change into another shape.

TRANSSHIP: another spelling of **Tranship** (q.v.).

TRANSUBSTANTIATE, v. *trăn'sŭb-stăn'shĭ-āt* [F. *transsubstantier*, to transubstantiate—from L. *trans*, across or over; *substan'tia*, substance]: to change from one substance into another substance. **Tran'substantia'tion**, n. *-ā'shŭn*, a changing into another substance; in the *Rom. Cath. Chh.*, the change—believed by Rom. Catholics to be miraculous—in the consecration of the substance of the bread and wine in the Eucharist, into the body and blood of Christ, only the appearance of the bread and wine remaining. **Tran'substan'tiator**, n. *-shĭ-ā-tėr*, one who believes in transubstantiation. **Tran'substan'tial**, a. *-shăl*, having passed from its original nature, essence, or substance; relating to transubstantiation.

TRANSUBSTANTIA'TION: literally, 'change of substance,' term used by the scholastic writers of the Rom. Cath. Church to designate the change believed to take place in the Eucharistic elements of bread and wine, in virtue of the consecration. Under the term **Real Presence** (q.v.), often loosely comprehended under the larger name of T., the Rom. Cath. doctrine as to the presence of the body and blood of Christ in the Eucharist, after consecration, is set forth. There remains, however, a further inquiry concerning the elements of bread and wine which had existed in their natural condition before the consecration. For Sacramentarians (q.v.), this question is easily resolved. But those Protestants who hold in common with Rom. Catholics the reality of Christ's presence, differ from them as to the co-presence of the substance of bread and wine after consecration. Some Anglican divines, who hold the real presence of Christ's body and blood, appear to content themselves with remaining silent as to the mode of the presence. Dr. Pusey goes so far as to say, that the dispute on this point between Anglicans and Romanists is 'probably a dispute about words' (*Eirenicon*, 229). For the Lutheran views as to the mode of the presence, see **Impanation**: **Real Presence**. According to the Rom. Cath. doctrine, which has been explicitly defined as an article of faith (Council of Trent, Sess. xiii. Can. 2), 'the whole substance of the bread is changed into the body of Christ, and the whole substance of the wine into His blood, the species alone remaining.' What is the precise philosophical meaning of the word 'species,' called also 'accidents,' in this definition, is not declared; but in popular language it may be described as meaning the appearances, i.e., those qualities or conditions of bread and wine which produce on the senses the impression of the presence of bread and wine. It is not taught, however, that in the change called T., the body and blood of Christ are formed out of the substance of the bread and wine, but that, in virtue of the Eucharistic consecration, the substance of bread and wine ceases to exist, and that the body and blood of Christ take their place; nor that the body and blood of Christ become what the schoolmen call the 'subject' of the 'accidents' of the bread and wine, but merely that, by a miraculous suspension of the ordinary law, the senses still continue to receive from the Eucharistic elements all the same impressions which they had previously received from the bread and wine; viz., of color, taste, smell, solidity, extension, figure, etc.

For the history of the controversy regarding T., see Lord's Supper. The objections to the doctrine have been drawn chiefly from the philosophical difficulties involved in it; and the defenders of it have mostly contented themselves with resting on the proofs which they draw from Scripture and tradition, and a general demonstration that the doctrine, though mysterious, does not involve any philosophical repugnance or impossibility, and that the philosophical arguments against it are at the least not conclusive. Some Rom. Cath. philosophers have even undertaken to demonstrate the possibility of T. by philosophical arguments; and it is especially remarkable that the celebrated Leibnitz (q.v.) not only entered at great length, and in several portions of his works, into this philosophical discussion, but professed to prove, by strict philosophical principles—by consideration of the properties of matter, of substance, of space, extension, and the like—that the essential principle of the body 'may exist in many places at the same time, nay, under far-distant and distinct species.'

TRANSUDE, v. *trăn-sūd'* [F. *transsuder*, to transude—from L. *trans*, through; *sudo*, I sweat]: to ooze or pass through the pores or interstices of a membrane or substance. **Transu'ding**, imp. **Transu'ded**, pp. **Transudation**, n. *trăn'sū-dā'shŭn*, the oozing of fluids or vapors through porous bodies. **Transu'datory**, a. *-dă-tėr-ĭ*, passing, as vapors or fluids, through porous bodies.

TRANSVAAL', **The**: see South African Republic.

TRANSVERSE, a. *trăns-vėrs'* [L. *transversus*, turned across, lying across—from *trans*, across; *versus*, pp. of *verto*, I turn]: lying or being across; running in a cross direction; cross; crosswise: in *bot.*, at right angles with the valves: N. that which crosses or lies in a cross direction: V. to alter; to overturn. **Transverse'ly**, ad. *-lĭ*. **Transver'sal**, n. *-vėr'săl* [F.—L.]: in *geom.*, a line which traverses or intersects a number of other lines: Adj. running or lying across. **Transver'sally**, ad. *-lĭ*.

TRANSYLVANIA, *trăn-sĭl-vā'nĭ-a* (called by the Hungarians *Erdély-Orszag*—Walach, *Arjal*—'the woody and mountainous country;' by the Germans *Siebenbürgen*, 'seven castles,' from the seven forts built by the Saxons which became nuclei of cities; and by the Romans *Transylvania*, from its position *beyond* the forest range which stretches s. from the Carpathians, and forms its w. boundary): principality, the most easterly territory of Austria, and since 1868 completely incorporated with Hungary, of which it now forms the e. portion. Area 21,518 sq. m. Pop. (1894) 2,247,049, of whom 55 per cent. were Roumanians, 29 per cent. Magyars and Szeklers, 10 per cent. Germans, and 50,000 Gypsies, the rest being Slavs, Armenians, Jews, and Italians. According to religious faith, the Greek Orientals number 32 per cent.; Greek Cath. 27 per cent.; Calvinists 14 per cent.; Rom. Cath. 12 per cent.; Luth. 10 per cent. T. is an elevated plateau (its lowest parts 530 ft. above sea-level) of irregular form, somewhat resembling a triangle of which the upper part has been irregularly removed; and is bounded partially on the n., and wholly on the e. and s., by a high range of mountains—continuation of the Carpathians—which sends out innumerable lateral ridges toward the centre of the country, and along the w. frontier; so that T. is an almost perfect natural fortress. There are no plains except where a river basin widens out; but the valleys are numerous and exceedingly picturesque. Almost the whole country is drained w. into the Danube, by the Theiss and its feeders in the n., and by the Maros, tributary of the Theiss, and its feeders, in the centre and s.; the s.e. corner is drained by the Aluta, or Alt, which, after a winding course, breaks through the s. bounding range near Hermannstadt; while a number of streamlets wind their way through the e. range, and join the Sereth. The climate is more healthful and temperate than that of Hungary, the mountain-chain along the s. frontier keeping off the hot winds. The soil is extremely fertile; but much arable land is still uncultivated. The valleys and hillsides give abundant pasturage to numerous herds of cattle and droves of horses; the cultivated districts yield good crops of maize, rye, barley, oats, all sorts of leguminous plants, tobacco, saffron, madder, hemp, and lint. Culture of fruits is extensive, and immense quantities of apricots, peaches, plums, apples, pears, and walnuts are annually produced. The extensive forests, covering nearly 5,300,000 acres, contribute largely to the wealth of the country. The vine is extensively cultivated, and, in spite of defective preparation, the product is excellent in quality. The mineral wealth of T. is great; gold is found more abundantly than silver, and silver than copper; yet there are few gold mines regularly worked, and no thorough investigation of the gold deposits seems to have been made. Iron is abundant at Torockzo, copper at Balan, lead at Rodna; the other minerals are mercury, manganese, antimony, sulphur, arsenic, vitriol, alum, marble, etc. Coal is not absent; but firewood is so abundant and cheap, that no other combustible has been sought; and even the extensive tracts of peat lie undisturbed. Rock-salt is abundant. T. has almost no manufactures, and the isolation of the country, lack of enterprise, and absence of good roads, have reduced commerce far below a fair proportion to the amount of the country's produce.

Of the various races which now inhabit T., the Walachs, the earliest possessors, though far most numerous, were till recently subordinated to the other races of T.; but since the revolution of 1848–9, have acquired a position in the country which, by all means, honest or dishonest, they are striving to improve; the Magyars entered as conquerors in the 10th c., and still constitute the nobility and gentry of the land; the Saxons were introduced 1143 and 1247 from the Rhenish provinces of Lower Saxony, by Kings Geysa II. and Bela IV. of Hungary, and received special privileges and immunities to induce them to settle in the country, and improve the cultivation of the soil; and the Szeklers, or Szekhelyi, are believed to be descendants of the once formidable Huns. The last three are the dominant races of T., and live apart from each other—the Magyars occupying the w. and centre, the Saxons the s. and n.e., and the Szeklers the s.e. The Magyars, Bulgarians, and Armenians speak the Magyar language as used in Hungary; the Saxons employ Low-German in speaking, and High-German in writing, but with considerable mixture of Magyar in both; the Szeklers speak a Turanian dialect; and the Walachs use their own language intermixed with corrupt Latin.—T. is little noticed in history till the Christian era, when part of it was occupied by the warlike Dacians, soon after whom the Sarmatian tribes of the Jazyges and Carpi settled in it. The conquest of the Dacians by Trajan, however, did not include that of the other two peoples, who proved very troublesome to the Roman settlers along the Danube, till they were conquered by Diocletian, and the Carpi carried away to Pannonia and other districts. In the middle of the 4th c., the Goths overran the country, defeating the Sarmatians in a great battle on the Maros, in which the monarch and the chief of his nobility perished; and they in their turn were forced, in 375, to retire before the Huns and their confederates. The Gepidæ next took possession of T. till their almost complete extirpation 566 by the Lombards and Avars. T. was conquered by the Hungarians about 1000, and was governed by Woivodes till 1526, when the death of the Hungarian monarch at Mohacs prepared the way for union of the two countries under the Woivode, John Zapolya; but the war which thence arose with the Austrians caused their complete severance, and Zapolya's sway was, 1535, confined to T., of which he became sovereign lord, under protection of the Turks. T., on its conquest by the Hungarians, was only partially settled; the e. part constituted a grazing-ground for wandering tribes who had migrated thither. The Saxons were summoned by the Hungarian monarchs to act as a counterpoise to the increasing power of the nobles; and from similar motives the Burzen land was given to the Teutonic Knights, but the arrogant bearing of those soldiers of the cross soon offended their titular lord, and they were forced to leave the country. The 'golden charter' of King Andrew II. (1224) secured a perfectly free political system to the Saxons, whose 'comes' or chief was, like the head of a clan, both judge and leader, and from whom the only appeal was to the king in person. The firm protection and generous treatment accorded to the Saxons by the Hungarian monarchs were rewarded by steadfast loyalty, and succor in men and money whenever required. During the rest of the 16th c., the country was distracted by the bitter strife between the Rom. Cath. party, supported by Austria, and the Prot. party, allied with the Turks; the Protestants, headed successively by princes of the houses of Zapolya and Bathory, generally maintaining the superiority. The next chief of the Prot. party was the celebrated Botskay, whose successes against Austria extorted from the emperor an acknowledgment of the independence of T. 1606. To him succeeded Bethlem Gabor, determined foe of Rom. Catholicism and Austria, who did important service during the Thirty Years' War. Between his son and successor, Stephen, and Ragotski arose a contest for the crown, in which Ragotski prevailed; but on his death, the civil war was resumed, till the complete rout of the Austrians by the Turks, under Kiupruli, placed the sceptre in the hands of Michael Abaffi, who reigned, till his death 1690, as a vassal of the Porte. The Austrians now again possessed themselves of T., despite heroic resistance; and though Tekeli (q.v.) succeeded for a brief period in rolling back the invaders, the peace of Carlovitz 1699 again put them in possession; and after the death of Michael Abaffi II., 1713, T. was completely incorporated with Hungary. It was erected into a grand principality 1765. During the insurrection 1848, the Hungarians and Szeklers joined the insurgents, and forced T. to reunite with Hungary, despite the opposition of the Saxons; and the Walachs, still little better than a horde of savages, were let loose over the land to burn, plunder, and murder indiscriminately; the prostration of the country being completed in the following year during the bloody conflicts here between Bem and the Russian troops. In the same year, T. was again separated from its turbulent neighbor, and made a crown-land; the portions of it which had (1835) been annexed to Hungary being restored, as well as the Transylvanian Military Frontier, 1851. In 1867 T. was again united with Hungary. It is now a province under the Hungarian crown, officially styled a grand-duchy. See *Transylvania, its Products and its People*, by C. Boner (Lond. 1865).

TRAP, n. *trăp* [AS. *treppe*, a trap: OHG. *trapo*, a snare. It. *trappa*, a trap, a falling door: Sp. *trampa*, a trap: Gael. *drip*, a snare: imitative of the sharp sound of a falling door]: a machine that shuts suddenly or with a spring, used for taking game or vermin; any device by which men or animals may be caught unawares; a stratagem: in *plumbing*, a contrivance in a waste-pipe, consisting of a U-shaped or double-curved pipe, with or without a valve, used to form a water-seal and thus prevent the upward passage of effluvia; a game, and the instr. used in it; the familiar name for an open carriage on springs; generally, a single-horse carriage, as a gig; *familiarly*, shrewdness; craft; a thief-catcher: V. to catch in a trap; to take by stratagem. **TRAP'PING**, imp.: ADJ. catching wild animals in traps: N. the art or practice of catching wild animals by traps. **TRAPPED**, pp. *trăpt*. **TRAPPER**, n. *trăp'pėr*, one whose occupation is to catch wild animals by means of traps. **TRAP-DOOR**, a door in a floor or a roof which shuts close like a valve. **TRAP-STAIR**, a narrow staircase or ladder leading up to a trap-door. **UP TO TRAP**, in *slang*, very knowing; up to snuff.

TRAP, v. *trăp* [F. *drap*, cloth: Sp. and Port. *trapo*, a cloth, rag: origin uncertain]: to deck; to adorn; to ornament with gay dress; to furnish with trappings (see TRAPPINGS and TRAPS, from the same root).

TRAP, n. *trăp*, or **TRAP-ROCK** [Sw. *trappa*; Dan. *trappe*, a stair: Dut. *trap*, step, degree—so called from the step-like or terraced aspect of the hills in which they occur]: in *geol.*, general term designating all the igneous rocks of various epochs down to the comparatively recent, distinct from the granites on the one hand, and the recent volcanic rocks on the other; a term embracing basalt, clinkstone, greenstone, compact felspar, hornstone, pitchstone, claystone, amygdaloid, trap-tuff, wacke, and the like. **TRAPPEAN**, a. *trăp'pĕ-ăn*, or **TRAP**, a. pert. to the trap-rocks; of the nature of trap. **TRAPPOUS**, a. *trăp'pŭs*, pert. to or resembling trap; partaking of the qualities of trap. **TRAP'PY**, a. *-pĭ*, resembling or composed of trap. **TRAP-TUFF**, n. *-tŭf*, or **TRAP-TUFA**, *-tū'fă*, a sandstone formed of the earthy rubbings from trap-rocks.—*Trap*, or *Trap-rocks* are an important section of the intrusive rocks, igneous or otherwise, associated with strata of all ages down to comparatively recent. They are so called because, having resisted, from their greater hardness, the abrading influences which have destroyed the softer sedimentary strata, they stand out in some places like huge steps on the faces of the hills and mountains. Unlike granite, the trap-rocks are free from silica, crystallizing as a separate constituent of the rock; from the modern volcanic rocks the structural difference is very slight. The dolerite variety, composed of labradorite-felspar and augite, is largely displayed in the Palisades of the Hudson river and the Mt. Holyoke range of hills, which are great dikes from which the lateral adjacent strata have been worn away.

Trap-rocks sometimes have a dull green color, from which they derive the old name greenstone, a translation of the German *grünstein*. It has been shown by Delesse that many trappean rocks owe their color to a dark variety of felspar which exists in them. Some greenstones are very light green, others are so dark as to appear black, and all intermediate shades of color occur. These rocks vary also very greatly in texture: in some, the crystals are sufficiently large to be detected with the naked eye; while others are so fine-grained and compact that it is difficult to resolve the separate crystals even with the help of a lens. Experiments have shown that the size of the crystal in an igneous rock increases in proportion to the length of time during which the mass remains fluid, and so permits the continued crystalline segregation of its various ingredients. The same is true in the artificial crystallization of common salt. The vitreous trap and obsidian would accordingly represent a speedily cooled flow of liquid rock. When the crystals are extremely minute, and there is a tendency in the rock to become columnar, it is a basalt. If the felspar is a soda-felspar, either albite or oligoclase, it is diorite; and this kind of rock may be seen to advantage at Marlborough, Mass., in place; n. of New York in large bowlders of a black appearance; and in many other localities. Euphotide, diallage rock, or gabbro, is a compound of Labrador felspar and diallage, a variety of hornblende; it is a coarse, or sometimes fine-grained rock, with granitic or porphyritic aspect. Hypersthene rock, or hyperite, is made up of Labrador felspar and hypersthene, another variety of hornblende; it is also a granitic-looking rock, very tough, and of grayish or greenish-black color: it is very abundant in the Isle of Skye. Distinction in varieties of hornblendic trap is based on the structure of the rock, as well as on its chemical composition. Trappean obsidian is occasionally found. Porphyritic trap is more abundant; a very black variety has received the name metaphyre. Amygdaloid is a trap with round or almond-shaped cavities, filled with agate, calcite, or other minerals, scattered through it. Trap-tuff consists of fragments of scoriæ, volcanic dust, and pieces of other rocks, forming a coarse irregular mass, sometimes bound together by a calcareous cement.

When the silica is in greater proportion than the felspar, it is called petrosilex: it is very compact, homogeneous, with flinty appearance. It forms a large proportion of the contemporary intruded trap-rocks in the Silurian measures of Wales. On the beaches s. of Boston, especially at Cohasset, petrosilex, in the shape of water-worn cobble-stones, abounds in all colors, and the most of it porphyritic. Clinkstone, or phonolite, is a variety found in layers or slabs which give a metallic ring when struck with the hammer. Aphanite, or cornean, scarcely differs from true felstone, except that it is more compact and tougher. Pitchstone, or retinite, is a vitreous felstone, less glassy than obsidian, and of green color and resinous lustre. When distinct crystals of one or more minerals are scattered through an earthy or compact base of felstone, a felspathic porphyry is formed. The ancient red porphyry of

Egypt, known as *rosso antico*, belongs to this set of rocks; it consists of a red felspathic base, in which are dispersed rose-colored crystals of oligoclase, with some plates of blackish hornblende and grains of oxidized iron-ore. The antique green porphyry has a very dark green felspathic mass, with light green or white crystals of felspar.

It is to be noted that the material of dikes may have come up in a wet and pasty state, not igneous necessarily; also that some of the varieties of so-called igneous rock are simply metamorphosed strata of rocks originally sediments.

TRAPA, *trăp'a:* genus of plants, of nat. order *Halorageaceæ* (q.v.), having a 4-parted calyx, a 4-petalous corolla, and a nut on which the altered calyx appears in the form of spines; the cotyledons very unequal in size. All the species are aquatic, with floating habit. *T. natans*, the WATER CALTROPS, is the only European species. It is found in ditches and ponds in s. Europe, and is grown in ponds in Holland. The floating leaves are rhomboidal, toothed, and smooth; those under water are cut into capillary segments. The fruit has four spines; the kernels are large and almond-like. They are good as food, either raw or roasted, and somewhat resemble chestnuts in taste. They are often used in soups. The French name is *Marron d'Eau* (Water Chestnut).—*T. bispinosa*, the SINGHARA NUT, affords a great part of the food of the inhabitants of Cashmere, and a tax on it by Runjeet Singh yielded a large sum annually.—*T. bicornis* is much cultivated in China, where the cultivation of aquatic plants is carried to a degree unknown in other parts of the world. Its fruit, much used for food, has a marvellous resemblance to a buffalo's head; the horns, the tuft of hair on the crown, the eye-cavities, and the nose are there in miniature. These fruits, of dark-brown color, with hard, polished shell, are sold in the streets of New York.

TRAPAN, v. *tră-păn'* [from TRAP 1 (q.v.)]: to catch by stratagem (see TREPAN 2, which is now the usual spelling): N. a trap; a snare.

TRAPANI, *trâ'pâ-nē* (anc. *Drepănum*): one of the principal seaports of Sicily, on Cape T., on the extreme n.w. coast of the island; cap. of the province of T., 40 m. w. of Palermo. The town is walled and defended by a fortress. The streets are wide, and well paved with flagstones. There is a natural harbor, admitting vessels of about 300 tons; a handsome town-house; a tower built by the Saracens; a cathedral; and many churches, some containing fine paintings. The inhabitants are engaged in the tunny, anchovy, and coral fisheries. The coral is brought from the coast of Barbary to T. to be cut and polished for exportation. T. is a busy town, and exports sumach, salt, soda, coral, alabaster, wine, tunny. and anchovies.—Pop. (1881) 32,020.

Ancient *Drepanum* was founded probably by the Carthaginians, under whom it became an important stronghold. Here took place a celebrated naval engagement between the Romans, under P. Claudius, and the Carthaginlans, under Adherbal, B.C. 249, in which the Romans were completely defeated. In Roman history, the name scarcely appears, but T. seems to have flourished in obscurity both then and during the middle ages.

TRAPE, v. *trăp*, and **TRAIPSE**, v. *trāps* [Scot. *trype*, to walk in an untidy manner]: in *old* and *prov. Eng.*, to trail or walk along in an untidy manner; to gad about. **TRAPES**, n. *trāps*, an idle sluttish woman: V. to gad about. **TRAPESING**, imp.: ADJ. or N. *trāps'ing*, gadding or gossiping about, generally applied to slatternly girls and women. **TRAPSED**, pp. *trāpst*.

TRAPEZIUM, n. *tră-pē'zĭ-ŭm*, or **TRAPEZE**, n. *tră-pēz'* [L. *trapezium*—from Gr. *trapĕziŏn*, a small table or counter, dim. of *trapĕz'a*, a table: F. *trapèze*]: in *geom.*, a plane figure contained by four straight lines, no two of which are parallel; a bar fastened to the ends of two suspended ropes on which various feats of agility are performed. **TRAPE'ZIUM**, n. in *anat.*, one of the small bones of the wrist; plu. TRAPE'ZIA, *-zĭ-ă*, or TRAPE'ZIUMS, *-zĭ-ŭmz*. **TRAPE'ZIFORM**, a. *-fawrm* [L. *forma*, shape]: having the shape of a trapezium. **TRAPE'ZIUS**, n. *-ŭs*, in *anat.*, a triangular muscle attached to the shoulder and the spine. **TRAPEZOID**, n. *trăp'ĕ-zoyd* [Gr. *trapez'ĭŏn*, a trapezium; *eidos*, resemblance]: in *geom.*, a plane figure contained by four straight lines, having two of the opposite sides parallel; in *anat.*, one of the bones of the wrist resembling the *trapezium*, but smaller; plu. TRAP'EZOID'ES, *-zoyd'ēz*. **TRAP'EZOID'AL**, a. *-ăl*, having the form of a trapezoid. **TRAPEZOHEDRON**, n. *trăp-ē-zō-hē'drŏn* [Gr. *hedra*, a seat, a base]: a solid figure bounded by twenty-four equal and similar trapeziums.—*Trapezium* is the general term for a four-sided plane figure, and is synonymous with 'quadrilateral.' But since all four-sided figures which have parallel sides possess distinctive appellations, the term T. is generally restricted to quadrilaterals whose sides are not parallel. The T. in the restricted sense (exclusive of parallelograms) has some remarkable properties: thus, if its sides be bisected, and the adjacent points of bisection joined, the resulting four-sided figure is a parallelogram; the sum of the squares of its diagonals is equal to the sum of the squares of the sides, together with four times the square of the line joining the middle points of the diagonals; if it can be inscribed in a circle (i.e., if its four corners are in the circumference of any circle), the one pair of opposite angles is equal to the other pair, and the sum of the rectangles by each pair of opposite sides is equal to the rectangle by the diagonals; if it can be described about a circle (i.e., if a circle can be made to touch on the interior, each of the four sides), the one pair of opposite sides is equal to the other pair.

TRAPPEAN, TRAPPOUS, TRAPPY: see TRAP 3.

TRAPPINGS, n. plu. *trăp'pĭngz* [Sp. *trapo*, a cloth, a rag (see TRAP 2)]: ornamental articles of dress; furniture; external and superficial decorations; ornamental housings for horses.

TRAPPIST, n. *trăp'pĭst:* member of an order in the Rom. Cath. Church, noted for extraordinary austerities—named from La *Trappe*, an abbey of the Cistercian order in Normandy, founded in the 12th c. The discipline of this monastery, in common with many others of the more wealthy monastic bodies, especially of those which, by one of the corruptions of the period, were held *in commendam*, had become much relaxed; and in the 17th c. little trace of the ancient religious observance remained. In the first half of that century, the abbey of La Trappe fell, with other ecclesiastical preferments, to the celebrated Armand Jean le Bouthelier de Rancé (q.v.), who undertook 1662 a reform of his monastery, and in the end the establishment of what was equivalent to a new religious order. His firmness and vigor overcame the early violent opposition. He himself, as evidence of complete change of life, entered on a fresh novitiate 1663; and in 1664 made anew the solemn profession, and was reinstalled as abbot; from which date began the new austerities which have characterized the order. The monks were forbidden the use of meat, fish, wine, and eggs. All intercourse with externs was cut off, and the old monastic habit of manual labor was revived. The reform of De Rancé is founded on the principle of perpetual prayer and entire self-abnegation. By the T. rule, the monks are obliged to rise at 2 A.M. for matins in the church, which lasts till 3:30; and after an interval in private devotion, they go at 5:30 to the office of prime, which is followed by a lecture. At 7, they engage in their daily tasks, indoors or out, according to the weather. At 9.30, they return to the choir, for the successive offices of terce, sext, and none; at the close of which they dine on vegetables without butter or oil, and a little fruit. This meal is succeeded by manual labor for two hours, after which each monk occupies an hour in private prayer or reading in his own cell until 4 P.M., when they again assemble in the choir for vespers. The supper consists of bread and water, and after a short interval of repose, is followed by a lecture. At 6, they recite compline in choir, and then spend half an hour in meditation, retiring to rest at 8 o'clock. The bed is a hard straw mattress, with coarse coverlet; and the T. never lays aside his habit, even in sickness, unless the sickness prove extreme. Perpetual silence is prescribed, unless in cases of necessity. The minor practices and observances are devised to remind the monk at every turn of the shortness of life and the rigor of judgment; and the last scene of life is made signal in its austerity by the dying man being laid during his death-agony upon a few handfuls of straw, that he may lay aside on the very brink of the grave even the last fragment of earthly comfort to which the necessities of nature had compelled him to cling.

The reformed order of La Trappe scarcely extended beyond France in its first period. The inmates of La Trappe shared, at the Revolution, the common fate of religious houses in France: they were compelled to quit their monastery; but a number of them found a shelter in Switzerland:

and when driven thence, about 250 of them found refuge eventually, under Czar Paul, in Lithuania and White Russia. Later in the war, small communities obtained footing in Italy, Spain, the United States, England, and even in France. After the Restoration, they resumed, by purchase, possession of their old home at La Trappe, which continues to be the head monastery of the order, and numbers nearly 200 members. In more recent years, they have formed many establishments in Europe; and others with extensive territory annexed, in Ky., Iowa, and other states. Many Trappists, however, were expelled anew from France (1880) under the Ferry laws.—A modification of the T. order, called 'T. Preachers,' was established at Pierre-qui-Bire, near Avallon.—See Gaillardin's *Trappistes; ou l'Ordre de Citeaux au* 19 *Siècle* (Paris 1844).

TRAPS, n. plu. *trăps* [a corruption of TRAPPINGS]: in *familiar language*, articles for dress or ornament easily packed and carried about; belongings; luggage; 'things.'

TRASH, n. *trăsh* [OE. *trash* or *trousse*, clippings of trees: Norw. *trosa*, to make a sound as of breaking, to break to bits: Icel. *tros*, rubbish: comp. OF. *dresche*, brewer's grains]: waste or worthless matter; refuse; in the W. Indies and other sugar-growing regions, the decayed leaves and crushed stems of the sugar-cane; Bagasse (q.v.): a worthless person: V. to free from worthless matter; to lop. TRASH'ING, imp. TRASHED, pp. *trăsht*. TRASHY, a. *trăsh'ĭ*, waste: worthless; rejected. TRASH'INESS, n. *-ĭ-nĕs*, state of being trashy.

TRASH, v. *trăsh* [comp. Gael. *trasd*, athwart]: to hold back or restrain, as by a leash or the like; to clog; to encumber; to thwart or cross one's purpose or intentions: N. a piece of leather, couple, or light weight, put on an overswift hunting-dog to lessen his speed; hence, any hindrance. TRASH'ING, imp. TRASHED, pp. *trăsht*.

TRASIMENUS LACUS, *trăs-ĭ-mĕ'nŭs lăk'ŭs:* ancient name of an Italian lake (*Lago Trasimeno*, or *Lago di Perugia*), between the towns of Cortona and Perugia; about 10 m. long by 8 broad; greatest depth not more than 30 ft. The lake has no apparent outlet, and the margins are flat and overgrown with reeds. It is surrounded by hills, those on the n. side, extending from Cortona to the lake, being known as the Gualandro Hills—*Montes Cortonenses* of Livy—covered at the present day with oak, vine, and olive plantations. The lake contains three islands.—T. L. is memorable chiefly for the great victory by Hannibal B.C. 217, during the Second Punic War, over the Romans, under their consul, C. Flaminius. Hannibal, leaving Fæsulæ, passed close by the camp of Flaminius at Arretium, laying waste the country as he proceeded in the direction of Rome. This, as the Carthaginian gen. intended, induced the consul to break up his encampment, and follow in pursuit, Hannibal meantime taking a strong position on the hills on the n. side of the lake, along which he was passing. The consul, coming up early next morning, when the whole place was enveloped in mist, saw only the troops in front on the hill of *Tuoro*, with whom he was preparing to engage, when he found himself surrounded and attacked on all sides. The Carthaginians thus had the Romans completely in their power, and took such advantage of the opportunity, that 16,000 Roman troops are said to have been either massacred or drowned in the lake, Flaminius himself being among the first who fell: 6,000 troops who had forced their way through the enemy, surrendered next day to Maharbal. It is said by both Livy and Pliny that the fury on both sides was so great as to render the combatants unconscious of the shock of an earthquake which occurred during the battle.

TRASKITES, n. plu. *trăsk'its:* in *chh. hist.*, name formerly given to the Seventh-day Baptists, from John Trask or Traske, who in the 17th c. advocated their opinions.

TRAS-OS-MONTES, *trăs-ōs-mŏn'tēs* (Beyond the Mountains): province of Portugal, forming the n.e. corner of the country, bounded n. and e. by Spain, s. by the river Douro, and w. by the Portuguese province Minho: 4,275 sq. m. It is in the main a high plateau, with bare mountain masses (Mt. Zinho, 7,445 ft.), broken by deep romantic ravines, wild and picturesque; but the port-wine district, known as the *Alto-Douro*, is very pleasant. Wheat and rye are raised, but the chief products are wine and oil. In several places silkworm cultivation is successful. Fruits, especially oranges, are produced abundantly in the valleys, and sumach on the mountains, which are also rich in unutilized metallic wealth.—Pop. (1881) 396,676.

TRASS, n. *trăs*, or TARRASS, n. *tăr-răs'* [prov. Ger. *trass*—from L. *terra*, earth]: in *geol.*, a tufaceous alluvium or volcanic earth which occupies wide areas in the Eifel district of the Rhine—used, when pulverized, as a hydraulic cement.—*Trass* resembles the Pozzuolana (q.v.) of Naples. It is of pale-yellow or grayish color, is rough to the feel, and consists almost entirely of pumice, in which are imbedded fragments of basalt, burnt shale, slate, sandstone, etc., and even numerous trunks and branches of trees.

TRAUMATIC, a. *traw-măt'ĭk* [Gr. *traumatĭkŏs*, of or for wounds—from Gr. *trauma*, a wound]: arising from wounds or local injury; vulnerary: N. a medicine useful in the cure of wounds. TRAUMAT'ICINE, n. *-ĭ-sĭn* a wound-healer—applied to a preparation of gutta-percha for covering wounds. TRAU'MATISM, n. *-ma-tĭzm*, the condition of the system occasioned by a grave wound.

TRAVAIL, v. *trăv′ĕl* [F. *travail,* pains, work: It. *travaglio;* Sp. *trabajo,* labor, properly a break for vicious horses: W. *trafu,* to stir, to agitate; *traf,* a stir, a strain: derived by some from a supposed mid. L. *travārĕ,* to make with beams, to pen, to shackle, to embarrass—from L. *trabs* or *trabem,* a beam]: to work or labor excessively; to toil; to suffer the pains of childbirth; to disturb greatly: N. labor with pain; the pangs of childbirth. **Trav′ailing,** imp.: Adj. in the pains of childbirth. **Travailed,** pp. *trăv′ĕld.*

TRAVANCORE, *trăv-an-kŏr′:* protected state in the extreme s. of India; bounded e. by the states of Tinnevelli and Madura, w. by the Indian Ocean; 6,730 sq. m. At the s. extremity of the state is Cape Comorin (properly, Kumarin). On the elevations the soil is light and gravelly; in the valleys it is in general a deep black mold. Rice, the sago-palm, and vegetables are principal products. Formerly, the cap. was Travancore, a decayed and unimportant town; the present cap. is the small town Trivanderam.—Pop. of state (1881) 2,401,158; (1891) 2,557,840.

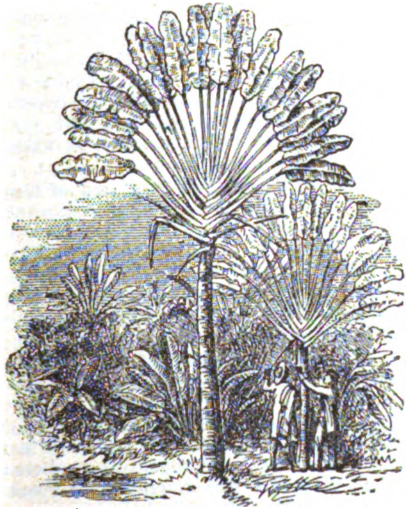
TRAVE, n. *trāv,* or **Travis,** n. *trăv′ĭs* [OF. *traf;* It. *trave,* a beam, a large piece of timber—from L. *trabs* or *trabem,* a beam]: a wooden frame to confine an unruly horse while being shod; in *OE.*, a beam or a lay of joists. **Trav′is,** n., or **Trav′ises,** n. plu. *-ĭ-sēz,* in a *byre* or *stable,* a low separating division or partition between the stalls for the animals, made of flags of stone set upright.

TRAVEL, v. *trăv′ĕl* [a different spelling and application of *travail:* It. *travaglio;* Sp. *trabajo;* F. *travail,* properly a drag for horses, then pains, labor, work: W. *trafu,* to stir, to agitate (but see also **Travail**)]: to pass through; to journey over; to go a march on foot; to pass to a distant place or country; to visit various parts of the world by sea or by land; to visit various places, as the agent of a wholesale house, to effect the sale of goods among retailers; to pass, as, time *travels:* N. a passing from one place to another; a journeying to or through a country; in *OE.*, for **Travail,** labor in childbirth. **Trav′elling,** imp. walking; going: Adj. pertaining to travel; itinerant; moving; movable: N. a passing through a country or countries. **Trav′elled,** pp. *-ĕld:* Adj. having made journeys. **Trav′els,** n. plu. *-ĕlz,* an account of things seen, with observations thereon, during a journey or journeys; the journeys themselves, as, he has returned from his *travels.* **Trav′eller,** n. *-ĕl-lėr,* one who is travelling, or who has travelled, in distant countries; a wayfarer; an agent of a wholesale house who travels from one place to another to effect the sale of goods among retailers or manufacturers: among *seamen,* a ring or hoop that slides along a rope or boom. **Traveller's-joy,** the shrub *Clemătis; C. Vĭtal′ba,* ord. *Ranun′cŭlācĕæ.* **Travel-stained,** a. having the clothes soiled through travel. **Travel-tainted,** in *OE.*, fatigued with travel; harassed.

TRAVELLERS, LAW AS TO: the law affecting passengers by land, in a carriage or public conveyance, may be stated as follows: The owners of the railroad or other carriage do not contract to carry the passenger with perfect safety; they do not warrant that he will not be injured; they contract merely to carry him without any negligence on their part. Hence, in case of accident, though it is not strictly correct in law to assume that the accident arose from some negligence of the carrier unless there is evidence for this, this presumption is in fact made, and it lies on the carrier to show that it was from no fault or negligence on his part that the accident happened. As questions of negligence must almost always be decided by a jury, and their prepossessions are against admitting the idea that accidents arise from any cause except negligence of the carrier—in the main a wholesome doctrine—a railroad or public company seldom attempts to dispute their responsibility on that ground. The rule is that a railroad company is responsible for the negligence of any of their servants; hence, in case of accidents, all passengers injured—and in case of death the parent, husband, wife, or children of the deceased passenger—commonly make a claim of compensation, except when the accident was evidently due to the passenger's own negligence. For the passenger is bound to take ordinary care of himself, avoiding rashness or foolishness which might lead to an accident. Railroad companies are not bound to carry everybody who comes, but merely to give reasonable accommodation to the ordinary number, otherwise their liability would be enormous on particular occasions where crowds assemble. Their interest is usually a sufficient inducement on such occasions to provide the accommodation required. A passenger has a right to carry with him Luggage (q.v.).

In the case of passengers by sea or by inland water-routes, a peculiar code has been constructed, owing to the peculiarity of their situation. Thus, an act of congress (*Revised Statutes*, § 4252) fixes the number of passengers that may be taken on board any vessel; the space allowed to each passenger; and makes many special regulations for the safety and comfort of passengers, too minute to be enumerated here.

TRAVELLER'S-TREE (*Urania speciosa*, or *Ravenala Madagascariensis*): remarkable plant of nat. order *Musaceæ*, native of Madagascar, and forming a characteristic feature of the scenery of many parts of that island. The stem resembles that of the plantain, but sends out leaves on only two opposite sides, like a great expanded fan. The lower leaves drop off as the stem grows, and in an old tree the lowest leaves are sometimes 30 ft. from the ground. A tree often has 20 or 24 leaves, the stalk of each leaf being 6 or 8 ft. long, and the blade 4 or 6 ft. more. The blade of the leaf is oblong, bright green, and shining. The fruit is not succulent, but is filled with a fine silky fibre of brilliant blue or purple color, among which are 30 or 40 seeds. 40 or 50 fruits grow in a bunch, and three or four bunches may be seen at once on the tree. The leaves are much used for thatch, and for many other purposes, and the leaf-stalks for the partitions, and often even for the walls of houses. The leaf-stalks always contain water, even in the driest weather—more than a quart being readily obtained by piercing the thick part of the base of a leaf-stalk; and this water is pure and pleasant: hence the name *Traveller's-tree.*



Traveller's-tree (*Urania speciosa*).

TRA'VEMÜNDE: see LÜBECK.

TRAVERS, ad. *trăv'ėrs* [see TRAVERSE]: athwart; across.

TRAVERSE, a. *trăv'ėrs* [OF. *travers*, across—from L. *transversus*, turned across—from *trans*, across; *versus*, pp. of *verto*, I turn: It. *traversa;* F. *traverse*, a cross-beam of timber]: lying across; in a direction across something else; transverse; crosswise; athwart: N. anything laid or built across; anything that thwarts or crosses; an unlucky accident: in *fort.*, a parapet and trench across a ditch—a detached parapet and trench on the flank of any work to protect the defenders from any enfilading fire—generally a parapet with banquette and palisade thrown across the whole width of the covered-way: among *seamen*, the zigzag course made by a vessel compelled to tack: in *arch.*, a gallery or loft of communication in a church or other large building: in *law*, a denial of some matter of fact by the opposite party: V. to place in a cross direction; to thwart; to travel over; to wander over; to pass over and view; to survey or examine thoroughly; to turn and point, as a cannon, in any direction: in *law*, to deny what has been advanced by the opposite party: in *fencing*, to oppose a movement; to turn, as on a pivot: **Ad.** crosswise; athwart. **Trav'ersing**, imp. passing over; thwarting; denying. **Trav'ersed**, pp. *-érst.* **Trav'erser**, n. *-sér*, one who opposes a plea in law: in *rail.*, a traverse-table, which see. **Trav'ersable**, a. *-să-bl*, that may be traversed or crossed; that may be denied. **Traverse-sailing**, the case in plane-sailing when the ship makes several courses in succession, the track being zigzag, and the directions of its several parts lying more or less athwart each other. **Traverse-table**, a table used in 'resolving a traverse' that is, in computing the departure made in traverse-sailing; in *rail.*, a platform with one or more tracks, and arranged to move laterally on wheels for the convenience of shifting carriages, etc.

TRAVERSE CITY, *trăv'érss:* city, cap. of Grand Traverse co., Mich.; on Grand Traverse Bay, and on the Grand Rapids and Indiana and the Chicago and Western Michigan railroads; 144 m. n. of Grand Rapids. It contains 6 churches, graded schools, library, 1 national bank (cap. $50,000), and 3 weekly newspapers; and has several saw, planing, and flour mills. Regular lines of steamboats connect T. C. with all ports and important landings on Lake Michigan. The city is noted as a summer resort and as a large lumber-exporting port. Pop. (1880) 1,897; (1890) 4,353.

TRAV'ERSING PLATFORM: arrangement to facilitate movement of cannon in battery. The gun is mounted either on an ordinary truck-carriage, or on rollers under its trunnions. The truck or rollers work in and out on two parallel iron rails 16 ft. or more in length, mounted on the traversing carriage. Wheels at each end of this platform (or more frequently if the weight of the gun be very great) are placed at right angles to the direction of the rails, and run on circular tramways, which have their centre in the embrasure through which the gun is fired. The rails incline toward the rear, to moderate the gun's recoil. The advantages are that the leverage for turning the gun is increased by the platform's length, while the circular rails diminish the resistance; that the gun is easily run out for firing on the upper rails; that by its own recoil it runs itself in again for loading; and that a much smaller embrasure is required to give a good compass to the muzzle.

TRAVERTINE, n. *trăv'ér-tĭn* [It. *travertino, tibertino*, travertine: L. *lapis Tiburtīnus*, the stone of *Tibur*—from anc. *Tibur*, the modern Tivoli, near Rome, at which travertine is abundantly formed from the waters of the Anio]: a whitish concretionary limestone deposited from the water of springs holding lime in solution; calcareous tufa or calc-tuff.

TRAVESTY, v. *trăv'ĕs-tĭ* [F. *travestir*, to disguise, to travesty—from L. *trans*, across, over; *vestīrĕ*, to clothe—from *vestis*, a garment]: to translate or parody in such a manner as to render ridiculous or ludicrous: to turn into burlesque: N. a burlesque translation or imitation of a work of a dignified or serious character. **Trav'estying**, imp. *-tĭ-ĭng*, turning into ridicule. **Trav'estied**, pp. *-tĭd*, parodied; turned into ridicule.—*Travesty* differs from Parody (q.v.) which changes the subject-matter and the *dramatis personæ*, but mockingly imitates the style of the original, while T. leaves the subject-matter partially, and the *dramatis personæ* wholly, unaltered; producing a purely comic effect by the substitution of the mean, the frivolous, and the grotesque in action or speech, for the serious, the noble, or the heroic.

TRAVIS: see **Trave.**

TRAVNIK, *trâv'nĭk:* town of Bosnia (now under Austrian administration), formerly the cap. of Bosnia; on the Lasva river, 45 m. w.n.w. of Bosna-Serai. Its numerous mosques, and the castle, dating from the middle ages, are the principal edifices. The people mostly are Mohammedans The principal industry is manufacture of sword-blades.—Pop. 12,000.

TRAWL, v. *trawl* [from Eng. *trail;* mid. L. *tragŭla*, a sled—from L. *trahĕrĕ*, to drag]: to fish by trailing or dragging a net sunk in the water behind a boat or vessel: N. a line of very great length, with numerous smaller lines attached, used in haddock-fishing, etc : the large net used in trawling. **Trawl'ing**, imp.: **Adj.** dragging a net for fish; using a drag-net: N. the act of dragging for fish with a net; also, in the United States and Canada, trolling, or fishing with a Troll (q.v.). **Trawl'er**, n. *-ér*, one who trawls; a small vessel used in fishing with the trawl-net. **Trawl-net**, the large purse-shaped net, about 70 feet long, and with a breadth of 40 feet at the mouth, used by trawlers.

TRAWL'ING: mode of fishing by a net dragged along the bottom of the sea, behind a boat, and much employed in deep-sea fishing. The net used, called a *trawl, trawl-net*, or *beam-trawl*, is a triangular purse-shaped net, about 70 ft. long. usually about 40 ft. wide at the mouth, and gradually diminishing to 4 or 5 ft. at the beginning of the *cod*, or smaller end of the net, which is about 10 ft. long and of nearly uniform breadth. The upper part of the mouth is secured to a wooden beam about 40 ft. long, which keeps the net open; this beam is supported on two upright iron frames, known as the *trawl-heads* or *irons*. The under side of the net corresponds with the upper, except that instead of being fastened to a beam, it is made with a deeply-curved margin attached to the *ground-rope*, the whole length of it in contact with the ground. A trawl has also generally two *pockets*, one on each side, made by lacing together the upper and under parts, so that fish turning back from the cod may be caught in them. The meshes vary in size from four inches square at the mouth, to an inch and a quarter square in the cod. Two stout ropes, of about 15 fathoms each, are fastened, one to the front of each of the trawl-heads, the other ends united to form a bridle, to which is shackled a warp 150 fathoms long. By this warp the trawl is towed, the quantity of rope paid out depending on depth of water, weather, and other conditions. Trawling is generally in the direction of the tide, sometimes across it, never against it. The rate of progress is usually only from half a mile to two miles an hour faster than that of the stream. The trawl can be used with advantage only on a sandy bottom or other smooth ground: on rough ground, the net would be torn in pieces. The vessels employed in trawling on the Dogger Bank and elsewhere near the British coast vary in size from 35 to 60 tons. Many of these trawlers, however, stay out at sea six weeks at a time in all seasons of the year; their fish being packed in ice collected by fast-sailing cutters, and so conveyed to market. Cod, haddock, and other *white-fish* are caught in great numbers by trawling; and some kinds of flat-fish, as soles, are scarcely to be obtained by any other means. Smaller trawl-nets than those above described are used in bays and estuaries. A *pole-trawl* is a less effective kind of trawl, now little used.—See NETS.

TRAY, n. *trā* [Dut. *draagen*, to carry; *draag-bak*, a hod for carrying mortar]: a very shallow trough employed for a variety of purposes in domestic use; a tin board; a kind of salver or waiter; any similar shallow trough.

TREACHEROUS, a. *trĕch'ėr-ŭs* [F. *tricherie*, trickery; *tricher*, to cheat: Dut. *trekken*, to draw, pull; *trek*, a trick (see TRICK)]: faithless; perfidious; traitorous to the state or sovereign; betraying a trust; not to be relied on. TREACH'EROUSLY, ad. *-lĭ*. TREACH'EROUSNESS, n. *-nĕs*, treacherous character. TREACH'ERY, n. *-ĭ*, betrayal of trust; violation of faith and confidence; violation of allegiance; perfidy. TREACH'ER, n. *-ėr*, or TREACH'OUR, n. *-ėr*, or TREACH'ETOUR, n. *-ĕ-tėr*, in *OE.*, a traitor; a trickster.—SYN. of 'treacherous': perfidious; false; plotting; insidious; traitorous; treasonable; illusory.

TREACLE, n. *trē'kl* [OF. *triacle*, an old confection, considered a sovereign remedy against poison—from L. *thērĭăcus;* Gr. *thērĭăkŏs*, good against the poison of animals, especially the bite of serpents—from Gr. *thērĭŏn*, a wild animal]: *formerly*, a preparation believed to be an antidote to poison, especially to poison resulting from the bite of a viper (see THERIACA): the liquid left during the process of granulating raw sugar; Molasses (q.v.); a saccharine fluid obtained from the juices of certain vegetables.

TREAD, v. *trĕd* [AS. *tredan;* Ger. *treten;* Dut. *treden;* Dan. *træde;* Icel. *troda;* Goth. *trudan*, to tread: W. *troed;* Gael. *troidh*, the foot]: to step or walk on; to beat or press under the foot; to trample in contempt or hatred; to copulate, as cock-birds; to set in motion with the feet; to walk or go; to walk with form or state; to dance, as to *tread* a measure: N. mode of stepping; copulation, as of birds; the part of a step on which the foot is placed; the bearing part of the outer rim of a wheel; the part of a fortification behind the parapet, on which soldiers stand to fire; the width of a bicycle from pedal to pedal: in *OE.*, place trod on or used in stepping; way; track. TREAD'ING, imp. pressing with the foot: N. act of pressing with the foot; a walking; a stepping; in *OE.*, way, track, or path. TROD, pt. *trŏd*. TROD, or TRODDEN, pp. *trŏd'n*. TREAD'ER, n. *-ėr*, one who or that which treads. TREAD-MILL, machine worked by a man or by a number of men or by an animal treading continously on the steps of a cylinder, used sometimes in productive labor, as in grinding corn, sawing stones or timber, etc., but chiefly as an instr. of prison discipline. **Treadle**, n. *trĕd'l*, a kind of lever acted on by the foot, forming part of many machines, and used in communicating motion to the machine or to some part of it, as the *treadle* of a loom, of a spinning-wheel, a grindstone, a bicycle, or the like; the albuminous cord which unites the yolk of the egg to the white. **Tread of a banquette**, in *fort.*, the upper surface of a banquette. **Tread of a lathe**, the upper side of the bed between the head-stock and the back centre.

TREAD-MILL: in Prison Discipline: appliance invented by Sir William Cubit, of Ipswich, England; consisting of a wheel in the form of a long cylinder, furnished with 24 steps round its circumference, and turned on its axis by the tread of prisoners, each of whom may be made to tread in a separate compartment, so boarded off that he can have no intercourse with the others. The prisoners are supported by a hand-rail, and cause the wheel to revolve about twice in the minute. As an instrument of prison discipline, it has been generally supplanted by the *Crank*, a small flaked wheel, like the paddle-wheel of a steamboat which, on the prisoner turning a handle outside, revolves within a box partially filled with gravel. The amount of strength necessary to each revolution can be regulated by the quantity of gravel used, and a register placed outside the prisoner's cell records the number of revolutions made. The crank is used only when hard-labor is part of the prisoner's sentence.

TREAD-SOFTLY, n.: in *bot.*, *Cnidoscolus stimulans*, plant of the order *Euphorbiaceæ* growing in the southern states. It has palmately lobed leaves, with spreading hairs, which, when trodden on by the bare feet of the negroes, sting them severely; hence the English name.

TREADWELL, *trĕd'wĕl*, **Daniel**: 1791, Oct. 10—1872, Feb. 27; b. Ipswich, Mass.: inventor. While a child he invented a machine for making wooden screws; later inventions were—1818 a new form of printing-press; 1822 a power-press; 1826 a system of turn-outs for single-track railroads; 1829 a machine for spinning hemp; 1835 a method of making cannon from wrought-iron and steel, similar to the later Armstrong gun. With Dr. John Ware he established the *Boston Journal of Philosophy and the Arts*, 1822. He was Rumford prof. in Harvard College 1834–45, and published *The Relations of Science to the Useful Arts* (Boston 1855); *On the Practicability of Constructing a Cannon of Great Calibre* (Cambridge 1856); and *On the Construction of Hooped Cannon* (1864).

TREAGUE, n. *trēg* [Sp. and It. *tregua*, a truce (see Truce]: in *OE.*, a truce or cessation of arms.

TREASON, n. *trĕ'zn* [OF. *traison;* F. *trahison*, treason—from *trahir*, to betray—from L. *tradĕrĕ*, to deliver up, to betray (see also TRAITOR)]: a breach of fidelity; treachery: specifically, a breach of allegiance to the sovereign or state to which one owes allegiance. **HIGH TREASON**, any crime affecting the safety or dignity of a sovereign or his state. **TREA'SONABLE**, a. *-ă-bl*, involving or partaking of the crime of treason. **TREA'SONABLY**, ad. *-ă-blĭ*. **TREA'SONABLENESS**, n. *-bl-nĕs*, the state or quality of being treasonable. **TREA'SONOUS**, a. *-ŭs*, in *OE.*, treasonable.—SYN. of 'treasonable': treacherous; traitorous; perfidious; insidious.

TREA'SON: highest civil crime which a member of the community can commit, being treachery against the state or the sovereign.

By the ancient common law of England, there was great latitude as to what was held by the judges to be T., whereby, says Blackstone (b. iv. c. vi.), the creatures of tyrannical princes had opportunity to create abundance of constructive treasons, i.e., to raise, by forced and arbitrary constructions, offenses into the crime and punishment of T., which never were suspected to be such. Thus, the accroaching, or attempting to exercise, royal power—a very uncertain charge—has been treated as T. The injustice involved in the theory of these constructive treasons led to the passing of the statute of 25 Ed. III. c. 2, which attempted to define T., in five forms here summarized. 1. When a man compasses or imagines the death of the king, queen, or their eldest son and heir. The law on this point has often been strained, and in arbitrary reigns, even a sermon unpreached was held to convict Peachum; and a paper found in a closet, to convict Algernon Sidney, though merely speculative in its character. 2. Violating of the king's wife, or his eldest daughter unmarried, or the wife of the king's eldest son and heir. 3. Levying war against the king in his realm, either by taking arms to dethrone the king, or under pretense to reform religion or the laws; by resisting the king's forces; by joining an insurrection, with avowed design to pull down all inclosures, all brothels, and the like; though such a conspiracy, if aimed at a particular house, would be only a riot. 4. Adhering to the king's enemies in the realm by giving them any aid and comfort. 5. Lastly, slaying the chancellor, treasurer, or the king's justices of the bench, or in assize, while in their places administering justice. Between the reigns of Henry IV. and Queen Mary, the courts returned to the system of inventing constructive treasons, and actually included as such the clipping of money, burning houses to extort money, refusing to abjure the pope, etc. These and other new-fangled treasons were totally abolished by a statute of 1 Ed. VI. c. 12. By subsequent statute some other forms of T. have been indicated; and by 36 Geo. III. c. 7, whoever compasses or intends death or bodily harm to the person of the king, is to be adjudged a traitor. Some safeguards for the accused were provided by a statute of William III.—The punishment of T. formerly was severe and even barbarous. The traitor was to be drawn on a hurdle to the place of execution, hanged by the neck, his head then severed from the body, the body divided into four quarters; and the head and quarters to be at the disposal of the crown. But 1870 these barbarities were repealed, and the sentence is now changed into hanging. The consequence of a conviction of T. formerly was forfeiture and corruption of blood; the corruption of blood having the effect that the attainted person could neither inherit lands from his ancestor, nor transmit them to any heir; but this was altered as regards England and Ireland 1870 (see ATTAINDER). The convict forfeits and is disqualified for any public office; the court may order him to pay the costs of his conviction, and his whole property is transferred to administrators named by the crown, who administer it and retransfer the surplus to his heirs and representatives.

Certain minor offenses, called misprision of treason, are those closely bordering on T.: such are offenses which consist in the bare knowledge and concealment of T., without any degree of assent thereto, for any assent makes the party a principal traitor. The punishment was loss of goods and lands during life. Another offense closely related to T. is that of wilfully pointing a gun at, or attempting to strike, the person of the sovereign, with intent to injure him (or her): the offense being punishable with 3 years' imprisonment. There is also an offense cognate to T., created by 11 and 12 Vict. c. 12—that of intending to depose the queen, or levying war against her in order to intimidate her or the houses of parliament. The offense of Præmunire (q.v.) was originally the introducing a foreign power into the country, and the name was extended to similar offenses.

In the United States, the constitution defines T. to the United States as consisting 'only in levying war against them, or in adhering to their enemies, giving them aid and comfort.' The constitution further declares that 'no person shall be convicted of T. unless on the testimony of two witnesses to the same overt act or on confession in open court.' Further that 'the congress shall have power to declare the punishment of T.; but no attainder of T. shall work corruption of blood, or forfeiture, except during the life of the person attainted' (Art III., sec. 3). T. may be committed also against any of the states of the Union. the punishment of T. is determined by the constitution of each state.

TREASURE, n. *trĕzh'ŭr* [OF. *tresor*—from L *thĕsau'rus;* Gr. *thēsau'ros*, anything laid or stored up: It. *tesoro:* F. *trésor:* the *r* after *t* is intrusive]: a store of money in reserve; riches hoarded; a great store of anything collected for future use; something highly valued: V. to lay up or collect for future use; to hoard; to prize; to store, as in the mind. TREAS'URING, imp. laying up for future use. TREAS'URED, pp. *-ŭrd*, laid up for future use; greatly valued. TREAS'URELESS, a. *-ŭr-lĕs*, without treasure. TREAS'URER, n. *-ér*, one who has the charge of the money or funds of a society, corporation, state, etc. TREAS'URER-

ship, n. -*shĭp*, the office of treasurer. **Treas'ury**, n. -*ĭ*, a place or building in which stores of wealth are deposited; a department of government where the expenditure of the public money is managed; all the officers connected with the department; an abundant store; a repository; in *OE.*, a treasure. **Treasure city or house**, *anciently*, a place where treasure was deposited. **Treasure-trove**, -*trōv* [F. *trouver*, to find]: any money, articles made of gold or silver, or the precious metals in any form, found in the earth or otherwise hidden, the owner of which is not known: in the United Kingdom all such treasure belongs by law to the crown, and the finder is guilty of an indictable offense if he fails to give it up. When given up, the crown pays the finder the full value of the treasure. In the United States the finder of a thing is its lawful custodian if the owner is unknown, and becomes its owner if the original owner cannot be found. **Treasury bond**, a species of Exchequer Bill (q.v.). **Treasury warrant**, in Britain, official and legal notice issued by the lords of the treasury for public information. **Lords of the treasury**, five state officers who have superintendence of the department for managing public finances of the United Kingdom, the chief of whom is called the first lord of the treasury, and is generally prime minister for the time being—the second being the chancellor of the exchequer, and its practical head. **Lord high treasurer**, formerly the third great officer of the crown in England, whose duties are—since the accession of George I.—discharged by the lords commissioners who are known as lords of the treasury. **Treasurer of the household**, officer in the lord steward's department of the royal household of the United Kingdom, who ranks next to the lord steward. He is always a member of the privy council.

TREASURY, The: in the *United Kingdom*, the department of executive government which has control of the revenue and expenditure of the country. The Treasury Board now consists of the prime minister (generally styled first lord of the T.), the chancellor of the exchequer, and three junior lords of the T., who have usually seats in parliament, as have also the two joint-secretaries of the T. The first lord being the head of the administration, his duties are not limited to the T., which is chiefly conducted by the other members of the board. The chancellor of the exchequer, who holds under a distinct patent the office of under-treasurer, is the effective head of the T., exercising the most responsible control over the expenditure of the different branches of the service, as also over all works demanding unusual outlay in the naval, military, and civil departments. He prepares an annual estimate of the expenses of the country, and of the ways and means by which they are proposed to be met; and this statement, known as the Budget, is submitted by him to the house of commons. The prime minister, when a member of the house of commons, has occasionally held at the same time the office of chancellor of the exchequer. The duties of the junior lords are in a great measure formal; the heaviest portion of the executive functions of the T. devolves on the secretaries.

The function of payment has ever since the Restoration been separated from the custody of the public revenue, the former only being vested in the T., while the latter belongs to the exchequer. By an arrangement effected by 4 and 5 Will. IV. c. 15, the revenue flowing into the T. is paid into the Bank of England, to the credit of the comptroller-gen. of the exchequer, and all payments on public account are made pursuant to a warrant or order of the T. No moneys voted by parliament can be drawn from the exchequer without the warrant of the T. board, nor can any payment be made from the civil list without its authority.

The duties of the T. board are numerous. The supplies for the army, navy, and civil service are issued under its authority; expenses of legal establishments, courts, sheriffs, etc., are subject to its examination. All payments for civil salaries, allowances, and incidental charges payable in England, and all payments for the army, navy, and ordnance, are made on its special authority. The boards of customs and inland revenue, and the post-office, are under its general authority. The expenses of colonial and other offices are controlled by it. The treasury possesses the patronage of the departments immediately subordinate to it.

TREASURY DEPARTMENT, UNITED STATES: one of the chief divisions of the federal executive govt. As its title indicates, the chief concernment of the T. D. is with the public revenues and the public disbursements, but it has control of a multitude of affairs which only indirectly or even not at all touch the question of disbursement and revenue: see SECRETARIES OF EXECUTIVE DEPARTMENTS.

TREAT, v. *trēt* [F. *traiter;* OF. *traicter*, to meddle with, to discourse—from L. *tractārĕ*, to treat, to handle—from *tractus*, pp. of *trahĕrĕ*, to draw]: to handle or manage in a particular manner, as to *treat* a subject exhaustively; to discourse, generally with *of;* to entertain with food or drink without cost to the guests; to behave toward; to manage, as a disease, in the application of remedies; to make and receive proposals with a view to the settlement of a claim, the adjustment of differences, etc.; to negotiate; to come to terms of accommodation; in *chem.*, to subject to the action of; in *OE.*, to entreat: N. an entertainment given as an expression of regard; something which affords much pleasure; unusual gratification. TREAT'ING, imp.: ADJ. using; discoursing on; entertaining: N. act of one who treats; bribery. TREAT'ED, pp. TREAT'ABLE, a. *-ă'bl*, in *OE.*, capable of being treated; moderate; practicable. TREAT'ER, n. *-ėr*, one who treats. TREAT'MENT, n. *-mĕnt*, management; manner of using; good or bad behavior of some person or thing; manner of applying remedies, as in disease. TREAT'ISE, n. *-iz*, a written composition in which the principles of a particular subject are discussed in a formal and methodical manner; a formal essay. **Treat'y**, n. -*ĭ* [F. *traité*]: negotiation with the view of adjusting differences; a formal agreement; a league or contract between two or more nations. To **treat with**, to negotiate; to propose an adjustment of differences. To **stand treat**, to entertain at one's own expense.

TREAT, *trēt*, **Robert**: 1622–1710, July 12; b. England: lawyer. He removed to New England with Sir Richard Saltonstall; was an early settler of Wethersfield and Milford, Conn., and of Newark, N. J.; returned to Milford, Conn., 1672, where he was chosen judge, maj. of militia, and commander-in-chief of the colonial troops for the war with King Philip 1675; and drove the Indians from Northfield and Springfield, routed them in their attack on Haddam, and took part in the battle at Narragansett Fort. T. was deputy-gov. of Conn. 1676–83 and 1698–1708, and gov. 1683–98.

TREATY: in public law, an agreement of friendship, alliance, commerce, navigation, or the like, entered into between two or more independent states. Treaties have been divided by publicists into *personal* and *real;* the former relating exclusively to the persons of the contracting parties. e.g., treaties guaranteeing the throne to a particular sovereign and his family; the latter relating to national objects apart from rulers, and binding the contracting parties independently of any change in the sovereignty of the states. The constitution of each particular state must be looked to, to determine in whom the power of negotiating and contracting treaties with foreign powers resides. In republics the chief magistrate, or the senate, or executive council, or both of these conjointly, are intrusted with the exercise of this sovereign power. Treaties to which the United States govt. is a party are made, on behalf of the United States, by the pres., by and with the consent of the senate, two-thirds of the members of the senate present concurring. The several states of the Union are incompetent to form any treaty, alliance, or confederation; nor can they lawfully or validly (without consent of congress) enter into any compact or agreement among themselves or with a foreign state. A treaty made by the United States is forthwith the law of the land. In monarchies, whether absolute or constitutional, the treaty-making power is vested usually in the sovereign. By the constitution of Great Britain, the exercise of this power is subject to parliamentary censure: ministers who advise the conclusion of any T. afterward judged derogatory to the national honor, or against the national welfare, being liable to impeachment, of which several instances appear in Eng. history. No special form of words is necessary for the validity of a T.; but modern usage requires that a T. originally verbal should as soon as possible be committed to writing.—A class of compacts between nations are included in the exercise of a general implied power confided to certain public agents as incidental to their official position; such are the acts of generals or admirals limiting hostilities by truces, capitulations, or cartels for exchange of prisoners:

these do not require ratification by the supreme authority, unless there be a reservation making that necessary. In other cases, however, a public minister or other diplomatic agent is not entitled to conclude or sign a T. with the foreign power to which he is accredited, without a full power additional to his general letter of credence. Even in the case of a T. concluded with full powers, it is often considered expedient to have a special ratification by the sovereign, or other proper executive authority of the state contracting.

A T. is considered extinguished when one of the contracting powers loses its existence as an independent state, when the internal constitution of either state is changed so as to make it inapplicable; and in case of war between the contracting parties, unless the stipulations of the T. have been expressly with a view to the rupture. As there is often a difficulty in distinguishing stipulations perpetual in their nature, from those that are extinguished by war, it is common to insert clauses in treaties of peace reviving and confirming the treaties formerly subsisting between the contracting parties.

A Treaty of Guaranty is an engagement by which one state promises to aid another when it is disturbed or threatened in the peaceable exercise of its rights by a third power.

Treaties of alliance may be offensive or defensive: in the former, the ally engages generally to co-operate in hostilities against a specified power, or against any power with which the other may be at war; in the latter, the engagements of the ally extend only to a war of aggression begun against the other contracting party.

The execution of a T. is occasionally secured by hostages, as at the peace of Aix-la-Chapelle 1748, when several peers were sent to Paris as hostages for the restoration of Cape Breton by Great Britain to France.

TREBBIA, *trĕb'bē-ă:* small but famous stream of Italy, rising in the Ligurian Apennines, near Montebruno, flowing n. through a mountain valley for the greater part of its course, and joining the Po two m. w. of Piacenza. Its entire length is about 50 m. On its banks Hannibal decisively defeated the Roman consul Sempronius B.C. 218.

TREB'IZOND: chief town of the eyalet T.; flourishing seaport on the Black Sea coast, about 110 m. n.w. of Erzerum. It is surrounded by walls of great extent, inclosing numerous gardens as well as the town itself. Outside the walls are suburbs, where most of the Christian inhabitants reside, and in which are the principal bazaars and khans. The city is defended by forts along the walls, and by a fortified citadel upon a high rock on one side of the town. It has a good harbor, which, however, is considered safe only in summer, the roadstead of Platena, 7 m. w., being employed for the rest of the year. There are numerous mosques and 'medressehs' (or colleges), and ten churches for Greek Christians. There are copper-foundries, dye-works, etc. The geographical position of T., is, in a commercial view, rivalled only by that of Alexandria, and has made it the great entrepôt of the commerce between e. Europe and central Asia, and the second commercial city of the Turkish empire. European goods are brought hither by regular services of steamers from Constantinople and the mouths of the Danube; and goods from Asia by caravans from Erzerum, Tabriz, and Syria. The value of annual imports by sea is about $7,500,000; of annual exports probably about $5,000,000. The inland traffic with Anatolia is supposed also to represent a value of nearly $5,000,000. The goods brought overland comprise silk, wool, tobacco, wax, gall-nuts, oil, opium, drugs of various kinds, honey, timber, carpets, and shawls; and those arriving by sea are principally cotton cloths, glass, cutlery, firearms, grain, iron, tin, spices, etc.—Pop. of T. estimated 32,000, of whom 2,000 are Armenians, about 8,000 Greeks, and the rest Turks; (1885) 45,000.

T. is the anc. *Trapezus*, and was founded by a colony from Sinope; it was a flourishing town under the Colchians, when Xenophon arrived there in his famous retreat from Persia. Conquered from Mithridates by the Romans, it rapidly rose in importance, became a free city, was made by Trajan the cap. of Pontus Cappadocicus, and by the same enlightened ruler was provided with a larger and better harbor. On the capture of Constantinople by the Crusaders 1204, and the expulsion of the Comnenian emperors, one of the imperial family, Alexis, established himself at T., where he had previously exercised the functions of governor, and founded a state known as the *Empire of Trebizond*, which stretched from the Phasis to the Halys, and maintained its independence against the Turks till 1462, when the last emperor was defeated and captured by Sultan Mohammed II.

TREBIZOND, or **TREBISOND**, *trĕb'ĭ-zŏnd* (in Turkish, *Tarabezûn*, Gr. *Trapezus*): Turkish eyalet in n.e. Asia Minor, stretching 240 m. along the s.e. shore of the Black Sea. The surface is mostly mountainous, the slopes toward the sea being thickly wooded. The e. portion of the eyalet is known as Lazistan, from its inhabitants, the Lazi, a savage vindictive race, notable for barbarous manners and predatory habits. The port of Batoum and a part of Lazistan on the Russian frontier were ceded to Russia 1878. Next to the chief city, Trebizond, the most important towns in T. are Samsoun, Kerasun, and Gumish-Khaneh. —Pop. (1885) 1,047,700.

TREBLE, a. *trĕb'l* [OF. *treble;* F. *triple*, threefold—from L. *triplus;* Gr. *triplous*, threefold (see TRIPLE)]: threefold; acute in a threefold degree; pertaining to the voice or voice-part called treble or soprano: N. in *music*, the highest of the four parts in a harmonized piece of music, generally containing the melody, and sung by a Soprano (q.v.) voice: one who plays or sings the treble: V. to multiply by three; to become threefold. **TREB'LING**, imp. **TREBLED**, pp. *trĕb'ld*. **TREB'LY**, ad. *-lĭ*, in a threefold number or quantity. **TREBLE CLEF**, the G clef (see CLEF).

TREBUCHET. n. *trĕb'ū-shĕt* [F. *trébuchet*—from mid L. *trebuchetum*, a warlike engine—perhaps from L. *trabs*, a beam] a warlike engine used in the middle ages for throwing stones and other missiles, and sometimes fiery material, into beleaguered places; a kind of weighing-scales; a cucking-stool; a kind of trap; also written **Treb'-ucket**, n. *-ū-kĕt*.

TRECENTO, n. *trā'chĕn-tō* [It., 300, but used for 1,300]: in *art*, term applied to the style of art prevalent in Italy in the 14th c.; called sometimes the Early Italian style.

TRECHOMETER, n. *trĕ-kŏm'ĕ-tėr* [Gr. *trechō*, I run; *metron*, a measure]: kind of Odometer (q.v.) or contrivance for ascertaining the distance run by vehicles.

TREDDLE, n. *trĕd'dl:* same as **Treadle**.

TREDEGAR, *trĕd'ĕ-gâr:* market-town on the n.w. border of Monmouthshire, England; 18 m. n.w. of Newport, about 150 m. w. of London. It stands in a district with extensive iron-works and coal-mines, which employ many of the inhabitants.—Pop. (1881) 18,771; (1891) 17,484.

TREDGOLD, *trĕd'gōld*, **Thomas**: English writer on architecture and engineering: 1788, Aug. 2—1829, Jan. 28; b. Brandon, Durham. At the age of 14 he was apprenticed to a cabinet-maker; 1808–13 he worked as a journeyman carpenter in Scotland; then removed to London, where 1823 he began business on his own account as civil engineer, having given his leisure from boyhood to the study of architecture and engineering, and later of mathematics, chemistry, mineralogy, and geology. T.'s great works are: *The Elementary Principles of Carpentry: a Treatise on the Pressure of Beams and Timber Frames, the Resistance of Timber, the Construction of Floors, Roofs, Centres, and Bridges* (4to, 2d ed. 1828); and *Strength of Cast Iron* (3d ed. 1831). He wrote other works and many contributions to scientific periodicals.

TREE, n. *trē* [AS. *treow;* Goth. *triw;* Icel. *tré*, a tree, wood: Skr. *dru*, wood, a tree: W. *derw;* Gr. *drus*, an oak]: perennial plant rising to some distance, with a single woody stem bearing a head of branches and twigs; something resembling a tree; a cross; a piece of timber, or something usually made of timber: V. to make to ascend or take refuge in a tree; to place in a difficulty; to form, shape, or stretch on a beam or block of wood called a 'tree.' **Tree'less**, a. *-lĕs*, destitute of trees. **Treenail**, one of the long wooden bolts used in fastening the planks of a ship to the timbers; one of the bolts which connect layers of masonry. **Genealogical** or **Family tree**, a representation of a tree in which the different divisions of a family are exhibited as the branches, and the relation of each family to the common ancestor, as the trunk or stock, shown.

TREE: perennial plant having woody stem and branches, the stem generally single, and bearing a head of branches and twigs; whereas a Shrub (q.v.) generally has a number of stems springing from one root. The terms tree and shrub are not, however, of very exactly defined signification; and many shrubs, under certain circumstances, assume the form of trees, either naturally or by help of art; while trees are, in other circumstances, converted into shrubs: the common hawthorn, e.g. often a mere shrub, sometimes appears as a tree, with stem and head as perfect as the greatest monarch of the forest. The gooseberry bush is trained in British gardens in a tree-like habit, notwithstanding its small size and the shortness of its stem; this, however, is entirely artificial, its natural habit being that of a shrub, to which, but for the gardener's knife, it would almost certainly relapse in a single year. The greater number of trees are exogenous. Palms are almost the only endogenous plants to which the name tree can be given. Very different from the ordinary exogenous trees are the Gymnogens (q.v.) of Lindley—firs, pines, yews, etc. Trees are found in all climates except the coldest; but the number of species, as well as the luxuriance of the forests, is greatest in the tropics. As we advance toward the polar regions, or ascend high mountains, trees first dwindle to shrubs, then to a creeping habit, and finally disappear before other forms of vegetation. Every kind of tree has its peculiar character, not only in foliage, but in general form and mode of branching. It is said that there is much coincidence between the shape of an entire tree and that of its leaves. An ash is as easily distinguished from an elm, by a practiced eye, in winter, when destitute of leaves, as in the full foliage of summer. The ordinary duration of life is various in different species. There are trees in England supposed to be more than a thousand years old, still flourishing. It is to be remembered, however, that biologically only the outer part of trunk and stem is really living, the solid wood being in a state of finished life and of rest, for the most part, and serving only as support; hence a tree may flourish when hollow with decay, like the old Charter Oak of Hartford, Conn., before its wreck by storm. Further, the computation of a tree's years by the number of rings in the wood is not accurate, since periods of drought may increase the number of rings. Oaks and yews are among the trees of longest life. The Baobab of Africa is regarded as a very long-lived tree: see EUCALYPTUS: SEQUOIA.—See ARBORICULTURE.

No acotyledonous plant assumes the character of a tree, except a few ferns, known as Tree-ferns.

TREE'-FERN: fern with tree-like woody stem, and a head of fronds resembling leaves of palms. They are found only in some tropical and sub-tropical countries. One species, *Alsophila gigantea*, which has a thick black trunk surmounted by a feathery crown, is found in the Himalaya, at an elevation of 7,000 ft. The soft central part of the stem of *Cyathea medullaris* is an article of food in New Zealand. Tree-ferns are a characteristic feature of the vegetation of New Zealand.

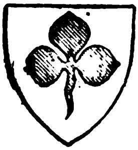
Tree-fern.

TREE'-FROG, or **Tree'-toad**: Batrachian (q.v.) of family *Hylidæ*, separated from the true frogs (*Ranidæ*) on account of the dilated disks or suckers at the tips of the toes, which are covered with a viscid secretion, and enable the animals to climb trees. The *Hylidæ* or tree-frogs are of small size, more elegant in form than the true frogs, of brighter colors and more active habits. They feed on insects, which they pursue on the branches and among the leaves of trees or shrubs, stealing toward them, and suddenly springing upon them. They deposit their spawn in water, like other batrachians—some of them on the edges of leaves hanging over water—and hibernate in mud. Their croaking is louder than that of true frogs, and is heard sometimes from the tops of high trees. One species of T.-F. occurs in middle and s. Europe, also in Asia and n. Africa: the warmer regions of the old world have numerous species, and in America they are still more abundant. Some occur in Australia. The T.-F. of Europe (*Hyla arborea*)—*Rainette* of the French—is found chiefly in moist woods, and in hedges near water. Although one of the smallest of European frogs, it can spring more than 3 ft. high to seize an insect. It becomes very noisy on the approach of rain, and is often kept in confinement to serve as a kind of barometer.—The Common Tree-toad or T.-F. (*H. versicolor*) of the e. United States, w. to Kan., is green, gray, or brown, with irregular gray blotches, above;

beneath, it is yellow; its loud trills are heard at night, especially in damp weather. Pickering's Tree-toad of the e. states is of yellowish-brown or fawn color, with dark rhombs or lines, the limbs with bars; its length is 1 in., half the size of the preceding. *H. Squirella*, S. C. to Ind., 1¼ in., is olive-green and blotched above, with a white line along the jaw to the shoulder. *H. Andersonii*, N. J. to S. C., rare, is pea-green, the sides yellow-spotted, and a purple band from the eye to the arm; size 1¼ in. The Swamp Tree-frog (*Chorophilus triseriatus*), 1 in. in length, is bluish-ash, with a dark dorsal stripe from the nose, branching at the middle of the body, but somewhat variable in color. It prefers swampy ground to trees. Its 'rattle has a rising inflection.'

TREES OF LIBERTY, or LIBERTY TREES: trees planted in times of political revolution, as the symbol of growing freedom. This symbolical custom was common in some of the Amer. colonies during the revolutionary war; and was imitated and its ceremonial greatly developed in France during the Revolution. The Jacobins in Paris are said to have planted the first tree of liberty 1790; and the custom spread rapidly through the whole of France. In almost every village around these trees crowned with the cap of liberty, the people gathered, dancing, and singing revolutionary songs. Poplars were at first employed; afterward oaks were substituted. This custom was regulated by a decree of the Convention, and diffused over foreign countries by the republican armies. During the Reign of Terror, thousands lost their lives under pretext of having injured a tree of liberty.—During the February revolution of 1848, trees of liberty again came into vogue—generally hung with tri-colored ribbons, circles, and triangles, the symbols of unity and equality, and surmounted with the cap of liberty. Frequently they were consecrated by priests.

TREFLEE, a. *trĕf'lē* [F. *trèfle*, trefoil]: in *her.*, term applied to a cross, the arms of which end in triple leaves, representing trefoils.



Trefoil in Heraldry.

Trefoil in Architecture.

TREFOIL, n. *trĕ'foyl* [L. *trifolium*, three-leaved grass—from *tres*, three; *folium*, a leaf: F. *trèfle*]: a three-leaved leguminous plant, such as Clover (q.v.), Buckbean (q.v.), Lotus (q.v.), Medic (q.v.), etc.; an architectural ornament resembling the three-leaved clover; in *her.*, a charge representing the clover-leaf, which is always depicted as *slipped* —i.e., furnished with a stalk.

TREGELLES, *trĕ-gĕl'lĕs,* SAMUEL PRIDEAUX, LL.D.: New Testament critic and editor: 1813, Jan. 30—1875, Apr. 24; b. near Falmouth, England; of Quaker family. He joined the Plymouth Brethren (q.v.); and in his latter years became a member of the Church of England. He did not receive a university education, and spent his early life in secular occupation; yet at the age of 25 he had formed the plan of a Greek New Test., on the principles which he afterward carried out. In preparing for his *magnum opus,* he visited the continent in search of MSS.; and, as connected with it, he published, among other works, an ed. of the *Codex Zacynthius,* an *Account of the Printed Text of the Greek New Testament* (1854), and *Introduction to the Textual Criticism of the New Testament* (1856). His *Critical Edition of the Greek New Testament* (1856–72) stands, as to manner of treatment, between that of Lachmann and that of Tischendorf. T. goes further than Tischendorf in his dependence on ancient and rejection of modern MSS. In 1862 T. received a pension of £100, doubled 1870.

TREILLE, n. *trĕl* [F.]: in *her.*, a lattice; trellis.

TREK, v. *trĕk* [Dut. *trek,* draught; *trekken,* to draw or pull]: in *s. Africa,* to haul or draw, as a wagon; to travel by ox-wagon; journey from place to place; emigrate; migrate: N. a journey or march. VOOR-TREKKER, n. *vōr-trĕk'kėr* [Dut. *voor,* before]: a pioneer; an emigrant; a first settler.

TRELLIS, n. *trĕl'lĭs* [F. *treillis,* any latticed or grated frame—from *treille,* an arbor or walk covered with vines—from L. *trichĭla,* an arbor or summer-house: origin doubtful: but comp. L. *trĭlix,* triple-twilled—from *tres,* three; *licium,* a thread]: a structure or frame of light cross-bars used as a screen or to support plants, etc.: V. to furnish with a lattice or open framework. TREL'LISING, imp. TREL'LISED, pp. *-lĭst,* furnished with a trellis, or formed as a trellis. TREILLAGE, n. *trĕl'lāj* [F.]: a contexture of light posts and rails used to support Espaliers (q.v.).

TREMANDO, n. ad. *trĕ-măn'dō* [It., shaking—from L. *tremo,* I shake]: in *music,* a general shake of the whole chord; the term directing it to be done.

TREMATODA, n. plu. *trĕ-măt'ō-dă* [Gr. *trēma,* an opening or pore, *trēmătos,* of an opening; *eidos,* resemblance]: in *zool.,* an order of intestinal worms comprising the fluke-worm. TREMATODE, n. *trĕ'mă-tōd,* one of the Trematoda or flukes.—*Trematoda* or Trematode Worms constitute, according to Dr. Cobbold's system, the second order of the sub-class *Sterelmintha* (Owen), of the class *Helmintha.* In ordinary zoological classification, the T. form a division of the group of *Platyelmia* or 'flat-worms,' which group is in its turn included in the class *Scolecida*—a division of *Vermes* (see ZOOLOGY). This order, as the Greek word *Trēmatōdes* indicates, is characterized by the possession of suctorial pores or openings. All the animals included in it have soft, roundish, or flat bodies, and their visceral organs are lodged in the parenchyma of the body. Most of the T. are hermaphrodites. They seldom attain large size (greatest length about five inches), but are usually visible to the naked eye. Like all Scolecida, the T. have a peculiar system of vessels ramifying through their bodies—the 'water-vascular' system.

The T. flukes, as they are popularly called, from their resemblance in form to small flukes or flounders, are not parasitic during the whole period of their existence. They perform active and passive migrations from parasitic to non-parasitic abodes; and during their larval wanderings in search of a final resting-place suitable to their adult condition, they provisionally occupy the bodies of different kinds of invertebrata (see Cobbold's *Entozoa*). In *Synopsis of the Distomidæ* (1861), Dr. Cobbold recognizes 344 species of flukes, of which 126 belong to fishes, 47 to reptiles, 108 to birds, 58 to mammals, and 5 to the invertebrata. Afterward he placed the number of species in the order at 400, at the lowest possible estimate: these he divided into the five families *Monostomidæ*, *Distomidæ*, *Tristomidæ*, *Polystomidæ*, and *Gyrodactylæ*—names based, except in the last case, on the number of their pores or oval suckers.

Van Beneden arranges these families into (*a*) *Monogenea* and (*b*) *Digenea*, the development in the former being simple, while in the latter there is an alternation of generation, the nurses and larvæ living chiefly in mollusks, while the adult animals live chiefly in the bodies of vertebrate animals. The *Monostomidæ* and *Distomidæ* belong to the latter, and the others to the former group. The family of *Distomidæ* comprises the principal and best-known genera of the order *Trematoda*, and its members are at once recognized by the presence of two pores or suckers—one, the anterior, connected with the mouth; the other, termed the acetabulum, usually on the ventral surface, in the middle line.

The following members of this order are of special interest, as very liable to infest man. *Fasciola hepatica* (see FLUKE) is not only common in all varieties of grazing-cattle, especially sheep, but has been found in the horse and ass, in the hare and rabbit, in the squirrel, beaver, kangaroo, etc., and is occasionally found in man, not only in the liver and gall-bladder, but beneath the skin in various parts, e.g., in the sole of the foot, behind the ear, and in the scalp: see ROT. *Distoma lanceolatum* is a species frequent in the sheep and ox, and has been found (infrequently) in the human subject. *Distoma ophthalmobium* has been occasionally found in the lens of the human eye. *Distoma hæmatobium* (*Bilharzia hæmatobia* of Cobbold) is the only known trematode not hermaphroditic.

The male is a cylindrical worm, only about half an inch in length; while the female is filiform, longer and much narrower than the male, being about ¾ of an inch in length. The first specimens were found by Bilharz of Cairo in the portal system, and the worm has since been found in the veins of the mesentery, bladder, and other parts. This parasite is common along the borders of the Nile, in s. Africa and the Mauritius. It is so common in

Egypt that, in 363 examinations of the body after death, Griesinger found it no less than 117 times.

The principal feature of the disease caused by this worm consists in a general disturbance of the uropoietic function. Diarrhea and hematuria occur in advanced stages of the complaint, being frequently associated also with the so-called Egyptian chlorosis, colicky pains, anæmia, and great prostration of the vital powers. The true source of the disorder, however, is easily overlooked unless careful microscopical examination be made of the urine and other evacuations. If blood be mixed with these, and there be also a large escape of mucus, a minute inspection of the excreta will scarcely fail to reveal the characteristic ova of *Bilharzia.*—Other trematodes are occasionally found in the human subject.

TREMBLE, v. *trĕm'bl* [F. *trembler;* It. *tremolare*, to tremble, to shake—from mid. L. *tremŭlārĕ*, to tremble—from L. *trĕmŭlus*, shaking; *trĕmĕrĕ*, to shake]: to shake with fear, cold, or weakness; to quiver; to shiver; to shake, as the voice: N. the act or state of trembling, as, in a *tremble.* **TREM'BLING**, imp. *-blĭng:* N. the act or state of shaking, as from fear, cold, etc. **TREMBLED**, pp. *trĕm'bld.* **TREM'BLER**, n. *-blĕr*, one who trembles. **TREM'BLINGLY**, ad. *-lĭ.* **TREMBLING-POPLAR**, the aspen-tree. **TREMBLORES**, n. plu. *trĕm-blō'rĕz*, the name given by the Sp. settlers of S. Amer. to the 'surface-tremors,' which in some volcanic districts are almost of daily occurrence.

TREMELLA, *trē-mĕl'la:* genus of fungi, of the division *Hymenomycetes*, soft and gelatinous, of no very determinate form, growing mostly on decaying wood. In some places in Britain they receive such names as Witches' Meat and Witches' Butter. Superstitious notions have been connected with them, and imaginary medicinal value has been ascribed to them.

TREMELLOID, a. *trĕm'ĕl-loyd* [Gr. *trĕm'ō*, I tremble; *eidos*, resemblance]: in *bot.*, jelly-like in substance or appearance; resembling a fungus of the genus *Tremella.*

TREMENDOUS, a. *trĕ-mĕn'dŭs* [L. *tremen'dus*, fearful, dreadful—from *trĕmo*, I tremble]: sufficient to excite fear or terror; dreadful; terrible; hence, extremely violent or great; wonderful; astounding. **TREMEN'DOUSLY**, ad. *-lĭ.* **TREMEN'DOUSNESS**, n. *-nĕs*, the state or quality of being tremendous.—**SYN.** of 'tremendous': dreadful; fearful; frightful; terrible; horrible; awful; terrific.

TREMOLITE, n. *trĕm'ō-līt* [from *Tremola*, a valley of Switzerland, where first found]: a variety or sub-species of Hornblende (q.v.), occurring in large prismatic crystals, pearly and semi-transparent; it is composed of silica, magnesia, lime, and a very little fluoric acid.

TREMOLO, n. ad. *trĕm'ō-lō* [It., trembling—from L. *trĕmŭlus*, shaking (see **TREMBLE**)]: in *music*, a term indicating that a note or chord is to be so played as to produce a tremulous effect. In singing, a T. effect is advantageous on rare occasions, but is often a resort of inferior singers to conceal defective tone or style. T. is also the name of a stop in an organ by which this T. effect is produced.

TREMOR, n. *trĕm'ŏr* or *trē'mŏr* [L. *tremor*, a shaking —from *tremĕrĕ*, to tremble: It. *tremore*]: a shivering or shaking; a quivering or vibratory motion.

TREMULOUS, a. *trĕm'ū-lŭs* [L. *trĕmŭlus*, shaking, trembling (see **TREMBLE**): Sp. *tremulo*]: affected with fear or timidity; shaking; vibratory; quivering. **TREM'ULOUSLY**, ad. *-lĭ*. **TREM'ULOUSNESS**, n. *-nĕs*, the state of being tremulous or quivering.

TRE'NAIL: see **TREENAIL**.

TRENCH, n. *trĕnch* [Prov. *trencar*, to cut off: It. *trinciare;* F. *trancher*, to cut off or to pieces: Sp. *trincar*, to break: origin doubtful—perhaps L. *truncārĕ*, to maim, to cut off]: a narrow cut or ditch excavated in the earth; in *mil.*, a deep ditch cut for defense, or for the shelter of besieging troops as they approach the works they desire to take; the wall or breastwork formed by the earth thrown out of the ditch (see **SIEGE**): V. to cut; to furrow deeply with the spade or plow; to dig a ditch in; to fortify or defend with trenches and earthen breastworks; to encroach upon. **TRENCH'ING**, imp.: N. the act of cutting into narrow ditches; the preparation of soils by deep cutting and exposure. **TRENCHED**, pp. *trĕncht:* **ADJ.** furrowed or cut deep. **TRENCH'ER**, n. *-ėr*, one who trenches; a wooden plate on which meat may be cut or carved; that which the trencher contains; food; a trencher-cap. **TRENCHER-CAP**, a square cap worn by professors and students at some universities; a 'mortar-board' cap. **TRENCHER-FRIEND**, in *OE.*, a parasite. **TRENCHER-MAN**, a feeder; a great eater. **TRENCH-PLOW**, a plow that turns up land to a greater depth than that effected by the ordinary plow. **TRENCHANT**, a. *trĕnch'ănt* [OF. *trenchant*, cutting—from *trencher*, to cut]: cutting; sharp; severe. **TO OPEN THE TRENCHES**, to begin the siege of a fortified place.

TRENCH, *trĕnch*, **RICHARD CHENEVIX**, Archbishop of Dublin: clergyman, poet, and scholar of the Church of England: 1807, Sep. 9—1886, Mar. 28; b. Dublin; of an Anglo-Irish family of Galway, the Trenches of Woodlawn. He was educated at Harrow and at Trinity College, Cambridge, where he graduated 1829. After travelling a few years he became a country curate; and 1835–46 he published six vols. of poetry, favorably received, and reissued in *Poems Collected and Arranged Anew* (1865); the first of them was *The Story of Justin Martyr*. In 1845 T. was presented to the rectory of Itchin Stoke; 1847 he became theol. prof. in King's College, London; 1856, dean of Westminster; 1864, abp. of Dublin, which office he resigned 1884.—T.'s poetry was marked by sensibility and refinement, but not by genius. His theological writings laid his contemporaries under deep debt of gratitude, not so much for their originality or critical insight as for their treasures of erudite illustration admirably selected to convey most valuable information in most desirable form. T.'s *Notes on the Miracles* (1846) and *Notes on the Parables* (1841; 13th ed. 1880) have had immense circulation. In the field of philology, while his interest was not in scientific problems for their own sake, he took pains to secure accuracy in his facts, and fascinated his readers with the fossil poetry and fossil history imbedded in language.' In this field, his charming little works, *Study of Words* (1851, more than 20 editions in the United States in the first ten years), *English Past and Present* (1855, many eds.), *Select Glossary of English Words* (1859, many eds.), have popularized historical study of the Eng. tongue—giving an impulse also to philological science. His principal works beside those above noted are: *The Lessons in Proverbs* (1853); *Studies on the Gospels* (4th ed. 1878); *Hulsean Lectures* (1845; 5th ed. 1880); *The Sermon on the Mount illustrated from St. Augustine* (1844); *Sacred Latin Poetry* (1849); *St. Augustine as an Interpreter of Scripture* (1851); *Synonymes of the New Testament* (1854); *The Epistles to the Seven Churches of Asia Minor; An Essay on the Life and Genius of Calderon; Deficiencies in Our English Dictionaries;* and *Lectures on Mediæval Church History* (1878).

TRENCHARD, *trĕnch'ėrd,* STEPHEN DECATUR: 1818, July 10—1883, Nov. 15; b. Brooklyn: naval officer. He was appointed midshipman in the U. S. navy 1834; promoted passed midshipman 1840, lieut. 1847, commander 1862, capt. 1866, commodore 1871, and rear-admiral 1875: and was retired 1880. He was on coast-survey duty 1845–6 and 1853–57; was presented by Queen Victoria with a sword and by the underwriters with a watch for rescuing the English bark *Adieu* and saving the cargo and all hands; and was on the *Powhattan* during her diplomatic cruise to China and Japan 1857–60. He distinguished himself in the civil war; and 1876, as commander of the n. Atlantic squadron, had 21 vessels under his charge, the largest individual fleet since the war.

TRENCK, *trĕnk,* FRANZ; and FREDERICK VON DER: two German barons and soldiers, of ancient E. Prussian family; cousins; whose adventures, recorded in autobiographies, have given them wide fame. Both were men of great physical strength; both blended in their character the hero and the braggart; both were subject to fits of uncontrollable passion; and both told premeditated lies.

Baron FRANZ VON DER T.: 1711, Jan.—1749, Oct.; b. Reggio, in Calabria, where his father was an Austrian general. At the age of 17 he received a commission as a cavalry officer, fought duels, and cut off the head of a man who refused to lend him money. He fled to Russia, where he was made a capt. of hussars. He was then a young giant 6 ft. 3 in. high; and it is probable that he knocked down his commanding officer, as he says he did, for rebuking him. He adds that he was placed under arrest while an engagement was going on; that, Marshal Münnich happening to pass, he called out that if set free and pardoned he would bring back three Turks' heads in an hour; that he was set free, and brought back four Turks' heads suspended from his saddle. This story may or may not be true; but certain it is that he was cashiered not long afterward, and returned to settle on his estates in Croatia. There first his career becomes historical. The Turkish frontier was overrun with banditti. T. armed and drilled 1,000 of his tenants, whom he called Pandours, and by their means succeeded in restoring order. He then offered the services of his regt. to Maria Theresa, and his aid was accepted. In 1740 he took part in the Silesian war at the head of his men, and perpetrated atrocious deeds of rapine and cruelty. There had been no such monster, says Carlyle, since Attila and Genghis. He attacked Cham, a fine trading-town in neutral territory, 1742, Sep. 7—an act in defiance of all law and discipline—and completely annihilated it. After the battle of Sohr, 1745, Sep., he offered to capture Frederick the Great, and bring him a prisoner to the Austrian camp. He failed in the enterprise, with great loss of men; but he secured the king's tent and much valuable booty. Suspicions were, however, entertained of his having been bribed to release the king; and he was tried by court-martial. He was imprisoned at Vienna, but escaped with assistance of Baroness Lestock, who bribed the jailers to allow him to be conveyed in a coffin, as if dead, beyond the city walls; was again captured at Bruges, and imprisoned at Grätz, where he took poison, and died. —See Carlyle's *Life of Frederick the Great;* and *Mémoires du Baron Franz de Trenck* (Par. 1787), written by himself.

Freiherr **Frederick von der T.**: 1726, Feb. 16—1794, July 25; b. Königsberg; son of a major-gen. in the Prussian service. He distinguished himself at the university. At the age of 16 he became a cornet in the guards; and, two years afterward, Princess Amalie, who saw him at a ball, we are told, conceived a violent passion for him. To this he attributed the king's subsequent antipathy toward him. There was, however, a much better reason: he was detected in a correspondence with his Austrian cousin, not long before the attempt to capture the king, and was arrested. 1746, Dec., he escaped; went to Vienna, where he fought several duels; then took a command in the Russian service. At the end of the war, the empress gave him a diamond-hilted sword, and a Russian princess bequeathed to him her fortune. Venturing to revisit Germany, he was arrested and imprisoned in the fortress of Magdeburg, where 'his efforts to escape secured him the honor of a specially constructed cell, a heavy burden of chains, and the additional punishment of being roused every quarter of an hour by the sentries.' Carlyle shows that T. had been in prison three months, and was there when the battle of Sohr took place, though he vividly describes his own adventures in the fight. He was accused of this lie in his own time, and admitted that he must have made a mistake: 'He had nothing but his poor, agitated memory to trust to.' He was released 1763, Dec. 24, through the efforts of Princess Amalie, who had not ceased to befriend him, and afterward settled at Aix-la-Chapelle, where he married the burgomaster's daughter, and went into business as a wine-merchant. He published his Memoirs in 1787: the book was translated into many languages, and T. became the most famous personage of his time. The ladies at Paris, Berlin, and Vienna wore bonnets, dresses, and rings *à la*

Trenck; and no less than seven plays founded on his adventures were brought out on the French stage; though Carlyle found reason in the Memoirs to characterize T. as 'an extensively famous blockhead.' His praise of the French Revolution brought him into serious trouble in Austria; and he went to Paris 1792 as a zealous adherent of the Mountain party; but there he was suspected as an emissary of Prussia, and was thrown into prison, where rumors among the prisoners, that the Prussians were advancing on Paris, and carrying all before them, were traced to T., who was in consequence condemned, and dragged to the guillotine. On the scaffold, although 69 years of age, he manifested the ungovernable passion which had characterized him through life. He harangued the mob; and at length the executioner had by force to hold his head by the gray hair on the block, to meet the fatal stroke.—See Chambers's *Book of Days*, I. 260; Carlyle's *Frederick the Great*, IV.; *Friedrich Trenck's Merkwürdige Lebensgeschichte von ihm selbst beschrieben* (2 vols. Berl. 1787); and *Leben und Thäten der Trencke*, by Watermann (2 vols. Leip. 1837).

TREND, v. *trĕnd* [Fris. *trund;* Dan. and Sw. *trind*, round: AS. *trendel*, a circle]: to have a general course or direction, as a coast-line; to stretch; incline; run: N. inclination in a particular direction. TREND'ING, imp.: N. general course or direction; tendency. TREND'ED, pp.

TRENDELENBURG, *trĕn'dĕh-lĕn-bûrch*, FRIEDRICH ADOLF: philosopher: 1802, Nov. 30—1872, Jan. 24; b. near Lübeck, Germany. He studied at the universities of Kiel, Leipzig, and Berlin, giving his studies chiefly to the anc. classic writers and to classical philology. He early came under the influence of Schelling's school in philosophy. His doctorate dissertation (1826) was an attempt to define Plato's philosophy with the aid of Aristotle's criticism: *Platonis de Ideis et Numeris Doctrina ex Aristotele Illustrata.* He gave 7 years (1826–33) to preparing a critical ed. of Aristotle's treatise *De Anima.* T. became prof. extraordinary in Berlin 1833, and was ordinary prof. from 1837 till his death. He was a remarkably successful teacher, treating in turn all the usual philosophical systems and doctrines, and at the same time conducting classes for study of Aristotle for advanced students. T.'s philosophy was that of idealism in the ancient or Platonic sense.—He wrote *Elementa Logices Aristotelicæ; Logische Untersuchungen* (an important factor in discrediting the Hegelian philosophy); *Die logische Frage; Naturrecht auf dem Grunde der Ethik.*

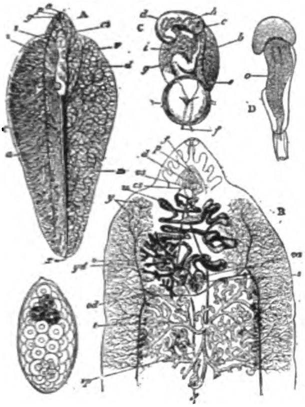
TRENT, *trĕnt:* river of the midland counties of England, rising on the n.w. border of Staffordshire, about 10 m. n. of Burslem, about 600 ft. above sea-level. It flows first s.e. to the border of Derbyshire, and thence generally n.e. through the counties of Derby, Nottingham, and Lincoln, till it unites with the Ouse (q.v.) to form the Humber (q.v.). It receives the Derwent, Idle, and Tarn from the w., and the Soar from the s.; its length is 170 m., being navigable for barges 120 m., up to Burton-on-Trent.

TRENT (It. *Trento*, Ger. *Trient*, L. *Tridentum*): walled town of Austria, in the southern Tyrol, cap. of the circle of T.; 60 m. above Verona; on the left bank of the Adige (here spanned by a wooden bridge 146 ft. long), in a beautiful and fertile valley, surrounded by high limestone hills. In its general aspect and architecture, T. is Italian; and with its spires and towers, ruined castles and ancient embattled walls, it presents an imposing appearance from a distance. The *Piazza Grande*, near the cathedral, is adorned with a splendid fountain of red marble, surmounted by a colossal statue of Neptune with his trident. The cathedral, begun 1212, is a beautiful specimen of the Romanesque style of Lombardy, with a few features suggestive of the contemporary German style; united to it is a fragment of the episcopal palace of the 12th c. The church of Santa Maria Maggiore is on the site of the council-chamber in which the famous 'Council of Trent' held its sittings. Among other public buildings are the church of the Jesuits, ornamented with the richest foreign marble; the New Theatre (holding 1,400 people); the town-hall; and the Palazzo Buonconsiglio, adjoining the town, a noble specimen of the feudal architecture of n. Italy, now occupied as a barrack. T. has manufactures of silks, wine, pottery, spirits, cloth, and sugar; and has large transit-trade. The inhabitants are Italian in language and habits; and the restoration to Italy of T. and the *Trentino* (dist. of T.) has been, with that of Trieste, the chief aim of the *Italia Irredenta* agitation in Italy (see IRREDENTIST).—Pop. (1880) 19,585; (1890) 21,486.

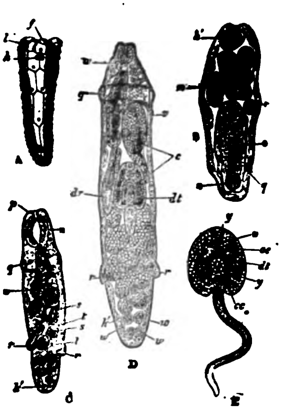
The ancient *Tridentum*, or *Tridente*, derived its name from the *Tridentini*, Alpine tribe, whose cap. it was. Conrad the Salic bestowed on the prince-bishops of T. the temporal rule of the valley of the Adige, and under them T. rose to great prosperity. It is still the see of a prince-bishop.

TRENT, COUNCIL OF: in *eccles. hist.*, famous council of the Rom. Cath. Chh., assembled at Trent (q.v.) by Pope Paul III. 1545, and continued in 25 sessions under Julius III. and Pius IV. until its close 1563. The Council of Trent was the most important of post-mediæval times; and is perhaps the most celebrated of the assemblies regarded by the Rom. Cath. Church as ecumenical or general, and the great repository of all the doctrinal judgments of that communion on the chief points at issue with the Reformers of the 16th c. It marks the modern dividing-line between Roman Catholicism and Protestantism. Very early in Luther's conflict with Pope Leo X., he had appealed from the pope to a general council; and after the failure of the first attempts at adjustment of the controversies, a general desire grew up in the church for the convocation of a general council, in which the true sense of the church on the questions at issue might be finally and decretorially settled. Another, and, to many, a still more pressing motive for desiring a council, was the wish to bring about the reform of the alleged abuses as well of the court of Rome as of the domestic discipline and government of national and

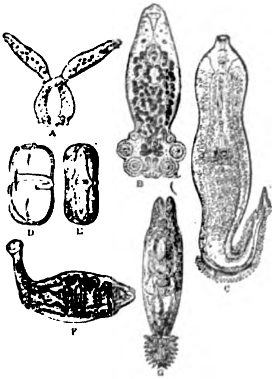
PLATE 4.



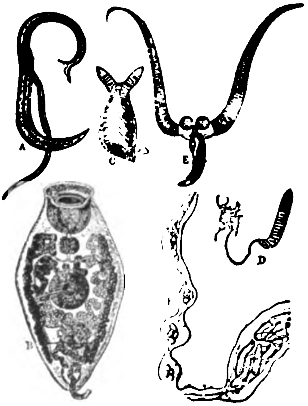
Fasciola hepatica: a, ventral surface; *b*, anterior portion, more highly magnified.



Various Stages of Development of *Fasciola hepatica*.



Diplozoon paradoxum.



Bilharzia hæmatobia.

Various Forms of Trematoda.

provincial churches, to which the movement of the Reformers was in part at least ascribed. But the measures for convoking a council were long delayed, owing partly, it has been alleged, to the intrigues of the party interested in maintaining those profitable abuses, and especially of the officials of the Roman court, including the cardinals, and even the popes themselves; but partly also to the jealousies, and even the actual conflicts, between Charles V. and the king of France, whose joint action was indispensable to the success of any such ecclesiastical assembly. It was not till the pontificate of Paul III. (1534–49) that the design assumed practical character. One of the great difficulties regarded the place of meeting, in discussing which much time was lost: so that the assembly did not actually meet till 1545, Dec. 13, its first session being merely a formal initiative. At its next session, 1546, Jan. 7, only about 25 abps. and bps., 5 generals of religious orders, and the ambassadors of Ferdinand I., King of the Romans (afterward emperor of Germany), assembled at Trent. The number of prelates afterward increased. The pope was represented by three legates presiding in his name—Cardinals Del Monte, Cervino, and Pole. The first three sessions were given to preliminaries. It was not till the fourth session, 1546, Apr., that the important work of the council began. It was decided, after much disputation, that the doctrinal questions and the questions of reformation should both be proceeded with simultaneously. Accordingly, the discussions on both subjects were continued through the fourth, fifth, sixth, and seventh sessions, in all which matters of great moment were decided, when a division between the pope and the emperor (then Charles V.) who, by the victory of Mühlberg, had become all-powerful in the empire, made the pope desirous to transfer the council to some place beyond the reach of Charles's arbitrary dictation. The appearance of the plague at Trent furnished a ground for removal, and in the eighth session a decree was passed, 1547, Mar. 11, transferring the council to Bologna.

This transfer was opposed by those bishops who were in the imperial interest; and the division which ensued had the effect of suspending all practical action. Meanwhile, Paul III. died. Julius III., who had, as Cardinal Del Monte, presided as legate in the council, took measures for its resumption at Trent, where it again assembled 1551, May 1. The sessions 9th—12th, partly at Bologna, partly at Trent, were spent in discussions regarding the suspension and removal; but in the 13th session the real work of the assembly was renewed, and was continued, slowly, but with great care, till the 16th session, when, on account of the apprehended insecurity of Trent, the passes of the Tyrol having fallen into the hands of Maurice of Saxony, the sittings were again suspended for two years.

But the suspension was destined to continue no less than nine years. Julius III. died 1555, and was followed rapidly to the grave by his successor (who had also been his fellow-legate in the council as Cardinal Cervino), Mar cellus II. The pontificate of Paul IV. (1555–59) was a very troubled one, because of internal difficulties and of the abdication of Charles V.; nor was it till the accession of Pius IV. (1559–65) that the council was again brought together to the number of 102, under the presidency of Cardinal Gonzaga, reopening their deliberations with the 17th session. All the succeeding sessions were devoted to matters of the highest importance—communion under one kind; the sacrifice of the mass; the sacrament of orders, and the nature and origin of the grades of the hierarchy; marriage, and the many questions connected therewith. These grave discussions occupied the sessions 17th—24th, till 1563, Nov. 11. Much anxiety was expressed by many bishops to bring the council to a conclusion, that they might be enabled to return to their sees in a time so critical: accordingly, as the preliminary discussions regarding most of the remaining questions had already taken place, decrees were prepared in special congregations comprising almost all the remaining subjects of controversy, such as purgatory, invocation of saints, images, relics, and indulgences. Several other matters, rather of detail than of doctrinal principle, were referred to the pope, to be by him examined and arranged; and 1563, Dec. 3, 4, these important decrees were finally read, approved, and subscribed by the members of the assembly, consisting of 4 cardinal legates, 2 other cardinals, 25 abps., 168 bps., 7 abbots, 7 generals of orders, and 39 proxies of bishops—besides the ambassadors still remaining at Trent.

These decrees were confirmed 1564, Jan. 10, by Pius IV., who had drawn up—based on them in conjunction with the creeds previously in use—a profession of faith known under his name: see ROMAN CATHOLIC CHURCH. The *doctrinal* decrees of the council were received at once throughout the Western Church—a fact which it is necessary to note, as the question as to the reception of the decrees of doctrine has sometimes been confounded with that regarding the decrees of reformation or discipline. As to the latter, delays and reservations took place. The first country to receive the decrees of the council as a whole was the republic of Venice. France accepted the disciplinary decrees only piecemeal and at intervals.

It would be out of place here to enter into the question as to the merits of this unquestionably great and momentous assembly, which may be said to have practically decided the religious development of the Western Church. It is viewed with directly opposite impressions by opposing critics, and it is commonly even said that in the Rom. Cath. Church itself the Council of Trent has met its worst adversary in the person of one of the priests of its own creed, the Servite monk Fra Paolo Sarpi (see SARPI, PIETRO). Sarpi, however, cannot fairly be regarded a Rom. Catholic. His sympathies are strongly anti-Roman, and his history of the council shows a rationalizing tendency, which gives him place among the advocates of that free inquiry which it was the object of Trent to repress by authoritative judgment pronounced once for all, and excluding all controversy. And though there are perhaps equal exceptions against the impartiality of his rival historian and antagonist, Pallavicino, the latter is admitted by Ranke, Raumer, and others to show less bias than Sarpi in the use of documents, at least in some special departments of the investigation. It must be said, however, that, for the purpose of an expression of the mind of the universal church, the council was too largely Italian to be free. The nationality of the bishops present in the later sessions was as follows: Italians 189, Spaniards 31, French 26, Greeks (titular) 6, Portuguese 3, Illyrians 3, Irish 3, Germans 2, Flemish 2, Polish 2, Croatian 1, Moravian 1, English 1. The effect of the council was more than to restate the pre-Reformation Rom. Cath. theology; it opened a new era in doctrine, closing many questions on which liberty had previously been allowed. In disciplinary reform it accomplished some useful results.

The canons and decrees of the Council of Trent were issued in Latin, and have been reprinted innumerable times. They have been translated into almost every modern language; the best ed. being that of Richter and Schulte (1853), and the most approved Eng. translation being that of the Rev. Jeremiah O'Donovan. One of the supplementary works assigned to the pope by the council at its close was the completion of a catechism for use of parish priests and preachers. This work has not all the authority of the council, but it is of the very highest credit, and is extensively used, having, like the canons and decrees, been very generally translated. A similar work was the publication of an authentic ed. of the Vulgate version of the Bible, as well as of the Missal and Breviary. All these have been accomplished at intervals; and there is besides at Rome a permanent tribunal, a congregation of cardinals, styled Congregatio Interpres Concilii Tridentini, to which belongs the duty of dealing with all questions which arise as to the meaning, the authority, or the effect of the canons and decrees of this celebrated council. —See SARPI: PIUS IV: PALLAVICINO.

TRENTAL, n. *trĕn'tăl* [F. *trente;* It. *trenta*, thirty—from L. *trigin'ta*, thirty]: a collection or series of thirty: specifically, in the *Rom. Cath. Chh.*, an office for the dead consisting of thirty masses, recited for thirty days in succession after the person's death.

TRENTON, *trĕn'ton:* city, cap. of Grundy co., Mo.; on Grand river, and on the Chicago Rock Island and Pacific and the Missouri and Pacific railroads; 100 m. from St. Joseph. It is in an agricultural country; with coal and hickory, white, red, and black oak, black walnut, elm, and hard and soft maple near; and has a coal mine and the machine and car shops of the Chicago Rock Island and Pacific railroad. Stock-raising is profitably carried on in its vicinity, and lumbering has become an important industry. The city has a water-system with a daily capacity of 2,000,000 gallons; gas and electric light plants; 6 churches; 2 national banks (cap. $100,000) and 1 state bank; one of the finest public-school buildings in n. Mo.; public natural park of 20 acres; 3 flour-mills; opera-house; and 3 daily and 4 weekly newspapers.—Pop. (1880) 3,370; (1890) 5,039.

TREN'TON: city, cap. of Mercer co. and of the state of N. J.; on the Delaware river at the head of steamboat navigation, and on the Delaware and Raritan canal and the Assanpink creek; and on the Pennsylvania, the Philadelphia and Reading, and branches of the Baltimore and Ohio and the Delaware Lackawanna and Western railroads; 33 m. n.e. of Philadelphia, 57 m. s.w. of New York. It is noted for its associations with the revolutionary war and early history of the federal govt., and for its large manufacturing interests. It has a healthful site; has excellent surface drainage and an improved sewage system; is supplied with water from the river by a system owned by the city, which cost $530,385 and is now valued at $1,000,000, and (1889) had 60 m. of pipe; is lighted by electricity, gas, and naphtha; has about 100 m. of streets; and contains 8 large and many smaller hotels. In 1890-1 the net public debt was $600,000; assessed valuation of real property $20,199,162; personal $6,981,643; tax-rate $1.75 on $100. There were 26 public-school buildings (of which the city owned 18), valued with furniture and apparatus at $349,133; class-rooms 26, teachers 139, seating capacity 6,935, enrolment 5,736, public-school enumeration 14,302. In 8 of the schools there were general, and in 9 professional libraries, the latter chiefly for teachers. The Rom. Cath. Church had the Sacred Heart Acad., with 70 pupils, and 5 parochial schools, with 1,796 pupils. Other educational institutions were the State Normal School, State Model School, State Industrial School for Girls, State School for Deaf Mutes, business colleges, and several private, art, and music schools. Besides the public-school libraries, there were the state library in the capitol, a public library, and a library under direction of the Woman's Christian Temperance Union. The publications included 4 daily, 1 tri-weekly, 8 weekly, and 2 monthly periodicals. There were 44 churches—viz, Meth. Episc. 11; Presb. 7; Bapt. 6; Rom. Cath. 6; Prot. Episc. 5; Friends 2; and Christian Lutheran, German Lutheran, Hebrew, Polish Hebrew, Evang. Assoc., Messiah Chapel, and Evang. German, each 1. T. is the seat of a Prot. Episc. and a Rom. Cath. bishop.

1891, Sep., there were 3 national banks (cap. $1,250,000), 1 state bank (cap. $500,000), 1 savings bank (surplus $301,-637), and 2 private banks. The notable buildings included the U. S. Court-house and Post-office; State-house, remodelled and rebuilt after partial destruction by fire, and completed 1889; Co. Court-house; State Arsenal; State Penitentiary; State Lunatic Asylum; City Hall; Almshouse; Union Industrial Home; Library Hall; Taylor Opera-house; Masonic Hall; Temperance Hall; St. Francis's Hospital; City Hospital; and Public High School. The public monuments completed or under way were the 'Swamp Angel,' an 8-in. Parrott rifle, the first gun fired from Morris Island, S. C., into Charleston 1863, Aug. 21, mounted on a stone pedestal; a 46-ft. monument to George B. McClellan; the statue of Washington (exhibited in the Italian section of the Centennial Exhibition); and a $60,000 monument (the corner-stone of which was laid 1891, Dec. 26) to be erected by govt., state, and private aid, in commemoration of the revolutionary battle of Trenton. The city has 2 horse-car and 2 cab companies. There are also a public park of 100 acres, public square, and attractive grounds around the public buildings; and a boulevard or river-drive of 5 m. along the Delaware has been begun.

T. owes its prosperity largely to the variety and extent of its manufactures. In 1880 it had 386 manufacturing establishments, which had $4,444,180 capital and 6,740 hands, paid $2,406,906 wages and $5,377,254 materials, and yielded products valued at $9,319,453. The most noted industry is the manufacture of pottery goods. In 1882, out of 55 white-ware potteries, with 244 kilns, in the United States, T. had 23 potteries, with 118 kilns, and it manufactures fully one-half of all the china and crockery produced in the country. The next industry in importance is the manufacture of steel wire. The great cables for the New York and Brooklyn Bridge were made at the Roebling works in T. Rubber, terra cotta, brick, and tile also are leading articles of manufacture. In 1889 there was a total of $15,186,000 invested in the various industries, of which the potteries had $2,500,000; wire-mills $1,500,000; iron rolling-mills $1,500,000; rubber-works $1,750,000; watch factories $300,000; woolen-mills $300,000; machine-shops $200,000; saw-making $150,000; brick-making $150,000; and tile-making $75,000. Trade and commerce are facilitated by 41 daily trains to New York and 51 to Philadelphia, by daily steamboat communication with Philadelphia, and by large canal advantages.

T. was partially settled 1676, and permanently 1680, and is supposed to have been named after William Trent, first chief-justice of the state. T. was the scene of two movements in the revolutionary war which did much to restore the waning ardor of the American troops and give renewed hope to patriots. After the disasters at Brooklyn and White Plains, Washington retreated into N. J., where a Hessian force pursued him across the state to the Delaware river. Washington led his army across the river 1776, Dec. 8, and on the morning of the 26th suddenly recrossed the ice-choked stream, and surprised and routed the Hessians. He again crossed the river to perfect defensive plans; and 1777, Jan. 1, returned to T. On the following day he attacked Cornwallis on the n. side of the city, and closed the engagement in the evening at the Assanpink Bridge, having baffled, if not actually defeated, the British.—The continental congress was assembled in T. 1784, Nov. 1—Dec. 24; Washington was given a grand reception at the Assanpink Bridge 1789; the town was made the cap. of the state 1790, and given a city charter 1792; was the seat of the federal govt. during the yellow-fever epidemic in Philadelphia 1793; and was the home of

Pres. John Adams 1798. The villages of Millham and Chambersburg were annexed to the city 1886, May 1.—Pop. (1880) 29,910; (1890) 57,458.

TREN'TON FALLS: series of cascades in West Canada creek, tributary of the Mohawk river, in Oneida co., N. Y., near Utica. There are five principal falls—named, successively, in passing up the stream; Sherman, High, Mill-dam, Alhambra, and Rocky Heart. The water descends 312 ft. in 2 m., through a chasm in limestone rock 70–200 ft. deep. The locality is one of rare beauty and large geological interest, and is a popular summer resort, with ample accommodations for transient and season guests in and near the little village which is named from the falls.

TRENTON-LIME'STONE, n. *trĕn'ton-* [from a township of that name in N. Y., where found]: limestone of Lower Silurian age—divided into the Hudson River group, the Utica group, and the Trenton group.

TREPAN, n. *trĕ-păn'* [F. *trépan;* Sp. *trepano*, an auger: It. *trapano*, an auger, a trepan—from Gr. *trupănŏn*, an auger, a trepan—from *trupa*, a hole]: in *surg.*, a circular saw for removing a portion of the skull (see TREPHINE): V. in *surg.*, to perforate the skull and take out a piece for the purpose of relieving the brain from pressure. TREPAN'NING, imp.: N. the operation of making an opening in the skull to relieve the brain from compression or irritation; Trephining (q.v.). TREPANNED', pp. *-pănd'*.

TREPAN, v. *trĕ-păn'* [AS. *treppe*, a trap; *treppan*, to ensnare: OF. *trappan*, a snare or trap for animals]: to lay a trap for; to ensnare; to take by stratagem: N. a snare; a cheat; a deceiver. TREPAN'NING, imp. TREPANNED', pp. *-pănd'*. TREPAN'NER, n. *-nėr*, one who trepans. Also spelled TRAPAN.

TREPANG, n. *trĕ-păng'* [Malay name]: an esteemed edible sea-slug or holothurian found in the Indian Ocean; also called sea-cucumber, and by the French *bêche-de-mer* = spade of the sea (see BECHE-DE-MER).

TREPHINE, n. *trĕ-fīn'* [from TREPAN 1]: an improved form of the trepan; a small cylindrical or circular saw with a centre-pin on which it works: V. to perforate with a trephine. TREPHI'NING, imp.: N. the act or operation. TREPHINED', pp. *-fīnd'*.

TREPHIN'ING: the opening through a bone, especially the skull, by surgical operation. Not only the Trephine (q.v.), but various forms of saws, mallet and chisel, bone forceps, elevator, etc., are employed. Prehistoric remains have been found in which the skull has been trephined, probably as a religious rite and almost certainly by the use of stone implements. Trephining, other than of the skull, is seldom resorted to except to remove carious or necrotic bone or to evacuate a bone abscess. The operation on the skull, is performed to protect or relieve the brain from pressure and irritation, seldom with direct reference to the bone itself. Formerly the operation was resorted to only when the brain was conspicuously disturbed by collections of pus, blood, or projecting fragments of bone, in depressed fractures of the skull. Under antiseptic methods, the operation is so safe that many surgeons advise it in all cases of fracture unless of the simple, undepressed form. Trephining is also used to remove brain tumors, to evacuate abscesses or effusions of serum or blood from other causes than fracture, to excise or relieve pressure upon a part of the brain to which epilepsy may be localized. In idiocy due to prevention of cerebral development by a skull abnormally small from premature ossification, a linear incision or saw wound is made, several inches long, on one or both sides of the median line, to allow expansion of the skull and development of the brain. Some improvement usually follows if the patient recovers, while death is preferable to the original state of the child.

TREPIDATION, n. *trĕp'ĭ-dā'shŭn* [F. *trépidation*—from L. *trepidātĭō* or *trepĭdātĭōnem*, trembling, fear—from *trepĭdus*, agitated, trembling]: a quaking or quivering from fear or terror; a state of confused hurry or alarm. **TREP'ID**, a. *-id*, shaking; trembling. **TREPIDITY**, n. *trĕ-pĭd'ĭ-tĭ*, agitation; emotion.—SYN. of 'trepidation': agitation; disturbance; tremor; emotion; fear; alarm; fright.

TRESCOT, *trĕs'kot*, WILLIAM HENRY: diplomat: b. Charleston, S. C., 1822, Nov. 10. He graduated at the College of Charleston 1840; was admitted to the bar 1843; appointed sec. of the U. S. legation at London 1852, and asst. sec. of state 1860, June. On the secession of S. C., he resigned and returned home, and served during a part of the war on the staff of Gen. Ripley, and 1862,64,66 in the legislature. In 1875 he removed to Washington to practice law; 1877 was appointed counsel for the United States on the fishery commission; 1880 a plenipotentiary to revise the treaties between the United States and China; 1881 a special commissioner to negotiate a protocol with Colombia concerning the rights of the United States on the Isthmus of Panama, and special envoy to Peru, Chili, and Bolivia; and 1882 a plenipotentiary to negotiate a commercial treaty with Mexico. He has published a number of historical works.

TRESPASS, n. *trĕs'pās* [OF. *trespasser*, to exceed, to pass on or over—from L. *trans*, across; *passus*, a step (see PASS)]: transgression generally; any wrong or damage done by one person to another; unlawful entry on the lands of another; a known violation of the moral law; sin: V. to pass over a limit or boundary; hence, to go upon the lands of another unlawfully; to make entry or passage without right or permission; to intrude aggressively or offensively; to violate any known rule of moral duty; to transgress; to intrude; to go too far. **TRES'PASSING**, imp. **TRES'PASSED**, pp. *-păst*. **TRES'PASSER**, n. *-sėr*, one who trespasses; an offender. **TRESPASS OFFERING**, among the *Jews*, an offering for some known violation of the divine law.—SYN. of 'trespass, n.': guilt; misdemeanor; offense; transgression; misdeed; iniquity; wrong; injustice; wickedness; injury; breach; infringement.

TRES'PASS, in Law: any wrong or injury committed on either the person or property of an individual, not amounting to a crime. It includes a great variety of torts (see TORT). As regards a T. on the person, the more familiar term is an assault (see ASSAULT AND BATTERY) or imprisonment; but T. as to goods and chattels is more commonly known under the names of the remedies applied—e.g., actions of Trover (q.v.), Detinue (q.v.). T. is the technical as well as popular name for that kind of injury to a man's land or house by intruding into it against his will. In the law of England and the United States, the maxim is well known that every man's house is his castle, and he is entitled to treat as an enemy any person who attempts to enter without his leave. There are, however, a few exceptions to this rule of the inviolability of a man's house; for it is no protection against the officers of the law when executing criminal process—e.g., coming to apprehend a person charged with crime. But, as regards mere civil warrants, the officers of the law have no right to break open a man's outer door in order to effect an arrest for debt; and no civil court can give the officer such a power. The officer can only wait outside, or endeavor by some stratagem to enter the house in a peaceable manner; and if once inside the outer door, he can then break his way throughout the house to find his debtor. Such is the law as to intruding into a man's house armed with the authority of the law.

It is a general rule applicable to a man's house as well as land that if a stranger enter without leave, and do not quit at the request of the owner (who is not bound to state any reason for his request), the owner may by force eject the intruder. In doing so, however, he must not use more force than is necessary to overcome resistance offered. If the intruder enter with force, the owner may turn him out without even first requesting him to depart; but if the intruder enter quietly, he must first be requested to leave before hands can be put on him. If, in turning a stranger out, the owner is assaulted by the stranger, the owner may defend himself; but a policeman cannot interfere, or rather it is not compulsory on him to interfere, unless he sees an assault committed by the intruder. Sometimes it is erroneously believed that a person is entitled to go to another's house on lawful business, and insist on admission, and even to remain till he get an answer—e.g., a creditor to demand his money; but this is a mistake: a creditor may be ordered away, and has no more right to intrude than any stranger. It is also sometimes erroneously supposed that any member of the public is entitled to enter into certain public places, e.g., a shop or a theatre; but this is not so. Any shopkeeper can turn any person he pleases, at any moment, out of his shop, and is not bound to deal with any person unless he chooses. So with a keeper of a theatre or other place commonly described as a public place. There is an exception, however, as to an Innkeeper (q.v.) who, is bound, if he have accommodation and the means, to admit a traveller requiring refreshment. As to all other places, the general rule is, that whoever is the occupier of a house or of land is exclusively entitled to possession, and can extrude any person who refuses on request to leave; or if he prefer to resort to his legal remedy, he can sue such intruder in an action of damages. The amount of damages recovered will depend greatly on the circumstances attending the T., and whether insult or outrage was an accompaniment.—See BREACH (BREACH OF CLOSE).

It is often erroneously believed by the public, as well as by some landlords or occupiers, and it is probably a wholesome delusion, that it is a criminal offense for a stranger to trespass on lands, and that such stranger can be given into custody for doing so; and, to keep up this impression, it is common for landlords or occupiers to post a notice with the words, 'Trespassers will be prosecuted.' But the fact of such a notice, or of there being a fence to the land, makes no difference with regard to the trespasser, who is just as much liable to an action of damages, but to nothing else, for the T., whether he knew or not of such notice; and in neither case can he be given into custody, as for a criminal offense. There is no action at law for a T. unless damage has been done—material damage and not imaginary, for the law does not care for trifles. If, however, a trespasser were to break the trees, or do wilful damage (other than mere walking or riding), he may be liable to be apprehended; and if he is at the time trespassing with intent to catch or kill game, he may in some cases be apprehended and given into custody (see GAME: POACHING).

Not only human beings are trespassers, but the word is by analogy applied to the trespasses also of dogs, cats, and other animals. The trespasses of cattle are often of importance, because of the damage done. The rule of law which governs the rights of occupiers of land on this subject is the following: an owner is not bound to fence his land, and, whether fenced or unfenced, a neighbor is bound neither to trespass himself nor allow his cattle to trespass. If, therefore, A's cattle trespass on B's land, B can impound them—that is, he can lock them up, and keep possession till the owner pay for the damage done; or, if he prefer it, he can bring an action to recover the damages; or he may drive them off, and also bring the action, until by one or other remedy he is satisfied. With regard to dogs, cats, and similar domesticated animals, the rule is, that the owner is merely responsible for such mischief as they commit by reason of some negligence on his part. If, for example, he knows of some bad propensity which they have to stray and attack or damage third persons, then it becomes his duty to take such means as will prevent their doing the mischief; but he cannot be held responsible unless and until the animals have on a former occasion done the mischief—in other words, it is only for a second and not a first offense that he can be made liable.

To guard against T. both of men and of animals, owners of land have sometimes resorted to spring-guns and man-traps, placed in their grounds. This practice was carried to a great height in England about the middle of the 19th c. In the United States the law does not authorize the setting of spring-guns, etc.; but in England the courts have decided that there is nothing to prevent an owner from so protecting his land. A statute, however, restricts such right to protection of dwelling-houses and gardens; so that now throughout the United Kingdom it is illegal to place man-traps and spring-guns in open fields. As regards, however, traps to catch dogs, cats, or other animals, an owner of land is entitled to place these in his lands, and even to allure the animals with bait, so as to invite them to their doom; but this must not be done so close to a highway as to tempt aside a dog lawfully passing along the highway, for the owner of a dog, being entitled to the use of the highway for the dog as well as himself, is entitled to have no danger placed in its way, such as a strong-smelling bait which should operate irresistibly on its animal instincts.

TRESS, n. *trĕs* [F. *tresse*, a tress, a plait—from mid. L. *tricia*, a plait—from Gr. *tricha*, threefold: It. *treccia;* Sp. *trenza*, a plait of three bands of hair]: a three-plaited band of hair; a braid or lock of hair; a ringlet. **TRES′SES**, n. plu. *-sĕz*. **TRESSED**, pp. *trĕst:* ADJ. having tresses; formed into tresses; curled; knotted. **TRESSY**, a. *trĕs′sĭ*, abounding in tresses.

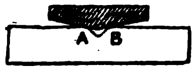
TRESSURE, *trĕsh′ūr*, in Heraldry: a subordinary, generally said to be half the breadth of the orle, and usually borne double, and flowered and counter-flowered with fleurs-de-lis. It is part of the royal insignia of Scotland.

TRESTLE, n., or **TRESSEL**, n. *trĕs′sl* [OF. *trestel*, a trestle: of uncertain origin, perhaps from L. *transtrum*, a transom: comp. Dut. *driestal*, a tripod: W. *trawst*, a rafter]: a frame consisting of a beam or bar fixed at each end to a pair of spreading legs (sometimes strengthened by diagonal braces), used with another or other frames of the same kind for supporting something, as a bridge, a table, or the like; the frame of a table: open braced framework for supporting the horizontal stringers of a bridge or other structure. **TRESTLE-BOARD**, a name applied to the designing-board of a draughtsman.

TRET, n. *trĕt* [Norm. F. *trett*, draught—from L. *tractus*, pp. of *trahĕrĕ*, to draw]: *formerly*, an allowance to purchasers of goods for waste or refuse matter of 4 lbs. on every 104 lbs. after deducting the tare.

TREVAT, n. *trĕv′at* [etym. doubt.]: a weaver's knife for cutting the loops of velvet pile.

TREVELYAN EXPERIMENT, *tre-vĕl′yan:* experiment in the expansion of metals by heat; named from the person who first carefully studied the phenomenon. When a block of iron or copper is considerably heated, and laid on a block of cold lead, a sound of some intensity, and more or less musical, is often heard. Trevelyan, after many trials, adopted for the upper block or 'rocker,' as it is called, a form somewhat resembling a fire-shovel, with a thickish block of metal instead of the blade: this is poised delicately on the lead block, so as to bear with nearly equal pressure on two points separated by a groove; and the rounded end of the handle is also supported. The annexed fig. shows a section of the head of the rocker and of the lead block. The rocker being heated, suppose it poised so as to touch the lead at A only. It heats the lead at A, and therefore suddenly expands it near that point, since lead is a poor conductor of heat. Thus, the lead, as it were, swells up at A, and tilts the rocker over to B. There the same process takes place, and so on; and as the rocker thus moves alternately from A to B, the successive impacts, at nearly equal intervals, form a musical sound. This can be altered at pleasure by loading the rocker, or by altering its moment of inertia. By proper care, almost any conducting body may be made thus to rock upon another, though, in the majority of combinations, the effect is very slight. The explanation above is due to Faraday.



TREVES, *trēvz* (Ger. *Trier*, Lat. *Augusta Trevirorum*): town of Rhenish Prussia, cap. of a circle; on the right bank of the Moselle, in a lovely valley between vine-covered hills, about 60 m. s.w. of Coblenz, 86 m. s. of Cologne. The river is here crossed by a bridge of 8 arches, 730 ft. long, 25 ft. wide. T. is a decayed place, and covers an area large in proportion to its population, owing to the number and size of the open spaces where houses formerly stood. The cathedral of St. Peter and St. Helen is a very interesting structure of various antiquity, principally of the early German Romanesque style of the 11th c., but retaining considerable remains in the interior of a previously existing Roman church of the age of Constantine. It has beautiful altars and tombs; rich old chasubles and missals, famous relics, among others the 'Holy Coat' (q.v.). Adjoining the cathedral is the *Liebfrauen-kirche*, a very graceful specimen of Early German Gothic architecture, finished 1243. The only other ecclesiastical buildings of interest now remaining are the chapel of the Benedictine convent of St. Mathias outside the town, and the church of the Jesuits. T. contains some beautiful old dwelling-houses of Romanesque architecture. No place in Germany is so rich in remains of the Roman period. Among these are the *Porta Nigra*, a colossal gateway, probably one of the five gates by which T. was entered in Constantine's time, the so-called Roman baths (more probably part of an imperial palace), and a basilica of Roman brick built by Constantine for a court of justice, which, after being successively the residence of the Frankish kings and archbishops, was mostly demolished to make room for an electoral palace erected 1614; this has recently been removed, and the basilica restored and fitted up as a Prot. church. Beyond the walls are the ruins of an amphitheatre. The piers of the bridge mentioned above, consisting of enormous blocks of lava, also are of the Roman period.

T. is the seat of a bishop, and of a provincial council, has a chamber of commerce, a priestly seminary, gymnasium, a library of 96,000 vols. and numerous MSS., a museum full of valuable antiquities—including the famous *Codex Aureus*, or MS. of the Gospels in gold letters, presented to the abbey of St. Maximin by Ada, sister of Charlemagne—and various benevolent institutions. There are manufactures of woolens, cottons, and linens; also a brisk trade in corn, timber, and Moselle wines.—Pop. (1880) with suburbs 37,431; (1885) town alone 26,125; mostly Rom. Catholics; (1890) 36,162.

T. derives its name from the *Treviri* or *Treveri*, a Gallic or, more probably, Belgic people, who in Cæsar's time inhabited a large tract between the Meuse and the Rhine. Their cap., *Augusta Trevirorum*, became a Roman colony probably in the time of Augustus, and ultimately became the headquarters of the Roman commanders on the Rhine, and a frequent residence of the emperors, particularly Constantine. Under the Franks, into whose hands it fell 463, it continued to flourish. In 843, it passed to Lorraine; in 870, to Germany; in 895, back to Lorraine; and finally was united to Germany by Emperor Henry I. The Abp. of T. was, in virtue of his office of chancellor of Burgundy, one of the electors of the empire, a right which seems to have originated in the 12th or 13th c., and continued till the French Revolution. The ambition and talents of some of these episcopal rulers obtained for them great political weight in Germany. Since 1814, T. has belonged to Prussia.—See Haupt, *T.'s Vergangenheit und Gegenwart* (2 vols. Trier 1822); more recent works by Schmidt, Bärsch, Braun, Leonardy, and Von Wilmovski; also Freeman's *Historical and Architectural Sketches* (1876).

TREVET, n. *trĕv′ĕt*, or **TRIVET**, n. *trĭv′ĕt* [F. *trépied*, a trivet, tripod—from L. *tripes* or *tripĕdem*, three-footed—from *tres*, three; *pes* or *pedem*, a foot]: a stool or stand supported by three legs; a movable iron frame or stand to support a kettle, etc., on a grate, and keep it from pressing on the coals. **RIGHT AS A TRIVET**, *familiarly*, all correct; in good health.

TREVISO, *trā-vē′sō:* town of Italy, cap. of the province of T.; on the river Sile, in a very fertile country, 17 m. n. of Venice, with whose lagoons the river communicates by canals. It is the seat of a bishop, and has a handsome duomo, with five cupolas, and with an altar-piece of the Annunciation by Titian; and among other buildings are the old Gothic church of San Nicolo (with some excellent pictures), the public library (30,000 vols.), and a fine theatre. The town is surrounded by a wall 24 to 38 ft. in height, and strengthened by numerous bastions. There are manufactures of hardware, a sugar refinery, a bell-foundry, and paper-mills.—Pop. of town (1881) 31,249.

TREVITHICK, *trĕv′ĭ-thĭk*, **RICHARD**: 1771, Apr. 13—1833, Apr. 22; b. Illogan, England: mechanical engineer. He became an engineer in the Cornish mines early in life; built several steam-engines containing original improvements; patented a high-pressure steam-engine for use on roads and tramways as motive power 1802; and with an improved one drew a load of 10 tons at the rate of 5 m. per hour at Merthyr Tydvil 1804, Feb. 21. The accidental blowing up of this engine and the general ridicule of his project delayed the actual introduction of the locomotive engine into England several years. T. resumed mining work in Cornwall and spent several years in mining in Peru, whither he had shipped a number of his small high-pressure condensing engines; but returned to England penniless 1827. He invented a large number and variety of useful articles, but obtained little profit from them.

TREVOR, *trĕ'vėr,* Sir JOHN, Knight: 1633–1717, May 20; b. England. In the parliament of James II. which met 1685, May 19, he was elected speaker of the house of commons, being a minion of Jeffreys (q.v.), whose bullying style he sometimes imitated. In the same year he was made master of the rolls. He contrived to maintain his political and judicial position after the revolution of 1688, and was again elected speaker 1690, acting also as first commissioner of the court of chancery, in which position, as in the speaker's chair, his greed and venality became notorious. In 1695 his conduct was investigated by a committee of the house of commons; and as a result he was declared guilty of high crime, and was formally expelled, though he retained the mastership of the rolls.

TREY, n. *trā* [OF. *trei;* L. *tres,* three]: a three at cards or dice; a card of three spots.

TRI-, *trī* [Gr. *treis,* three; *tris,* thrice: L. *tres,* three]: a common prefix in scientific terms, signifying *thrice,* or *in threes*—as in *tri*partite, divided into three parts; *tri*lobate, three-lobed.

TRIABLE, a. *trī'ă-bl* [see TRY]: that may be subjected to trial or test; that may undergo a judicial examination. **TRI'ABLENESS,** n. *-nĕs,* the state of being triable.

TRIACONTAHEDRAL, a. *trī'ă-kŏn'tă-hē'drăl* [Gr. *triakonta,* thirty; *hedra,* a seat, a base]: having thirty sides; bounded by thirty rhombs.

TRIAD, n. *trī'ăd* [Gr. *trias* or *triăda,* the number three—from *treis,* three: F. and It. *triade*]: a union of three; three objects or subjects which may be connected more or less—e.g., Creation, Redemption, and Resurrection, or Romans, Saxons, Normans: in *music,* the common chord, consisting of a tone with its third and fifth: in *chem.,* an element which combines with three atoms of a monad element (see VALENCY). HINDU TRIAD (see TRIMURTI). **TRIADIC,** a *trī-ăd'ĭk,* pertaining to a triad.

TRIADELPHOUS, a. *trī'ă-dĕl'fŭs* [Gr. *treis,* three; *adelphos,* a brother]: in *bot.,* having stamens united in three bundles by their filaments.

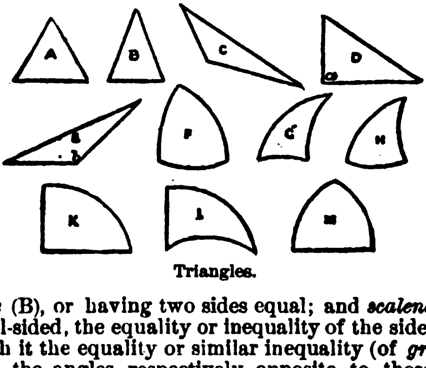
TRIAL, n. *trī'ăl* [from TRY, which see]: any effort or exercise to ascertain what can be done; an attempt; an endeavor; examination by test or experiment; experience; any suffering or temptation that puts strength or virtue to the test; affliction; the formal examination before a judge (and usually a jury) by means of witnesses in a court of law, as to whether certain alleged facts or charges are true or untrue. TRIAL AT BAR, a jury trial before the full court of four judges—a procedure seldom resorted to.—SYN. of 'trial': effort; attempt; endeavor; essay; experiment; exertion; test; proof.

TRIALITY, n. *trī-ăl'ĭ-tĭ* [formed from a supposed *trial*, composed of three (in imitation of *duality*, from *dual*, composed of or pertaining to two)—from L. *tri-*, three, and *-ity*, a terminative denoting state or condition]: threefold character or state; threeness. [Rare.]

TRIAMINE, n. *trī'ăm-ēn* [Gr. *treis*, three; Eng. *amine*]: in *chem.*, an amine containing three atoms of nitrogen, or derived from three molecules of ammonia.

TRIANDRIAN, a. *trī-ăn'drĭ-ăn*, or TRIAN'DROUS, a. *-drŭs* [Gr. *treis*, three; *anēr* or *andra*, a man]: in *bot.*, having three distinct and equal stamens, as in the class TRIAN'DRIA, n. plu. *-drĭ-ă*.

TRIANGLE, n. *trī-ăng'gl* [F. *triangle*—from L. *trian'gŭlum*, a triangle—from L. *tres*, three; *angŭlus*, a corner, an angle]: plane figure bounded by three lines, having three corners or angles; anything in the form of a triangle; a musical instr. of percussion, made of metal, and struck while hanging free; so called from its shape. TRIAN'GLED, a. *-gld*, having the form of a triangle; formed into triangles. TRIAN'GULAR, a. *-gū-lėr*, having the form of a triangle; relating to a triangle. TRIAN'GULARLY, ad. *-lĭ*. TRIAN'GULAR'ITY, n. *-lăr'ĭ-tĭ*, quality of being triangular. TRIAN'GULATE, v. *-lāt*, to divide into portions in the form of triangles for surveying; to make triangular. TRIAN'GULATING, imp. TRIAN'GULATED, pp. TRIAN'GULA'TION, n. *-lā'shŭn*, division of a district of country into portions in the form of triangles for convenience of accurate measurements (see below). TRIANGULAR COMPASSES, compasses with three legs for taking and laying off three points at once. TRIANGULAR NUMBERS: see FIGURATE NUMBERS.—*Triangles* are classed according to the relative length of their sides, as *equilateral* (A), or equal-sided; *isosceles* (B), or having two sides equal; and *scalene* (C), or unequal-sided, the equality or inequality of the sides carrying with it the equality or similar inequality (of *greater* or *less*) of the angles respectively opposite to these sides, though the *ratio* of inequality of the sides not at all corre-

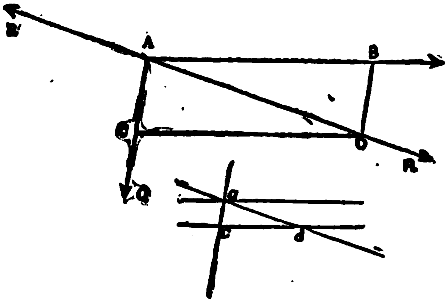


Triangles.

sponds to that of the angles. Considered with reference to the size of its angles, a T. is *right-angled* (D) when one of its angles (*a*) is a right angle (90°); *obtuse-angled* (E), when it has one angle (*b*) greater than a right angle; and *acute-angled* (A or B), when it has no angle so great as a right angle; the well-known property, that the sum of the angles of a T. is equal to two right angles, preventing the possibility of more than one of them being as great as a right angle. For the relations between the sides and angles of a T., see TRIGONOMETRY. The T. being the fundamental figure of plane geometry, through which the properties of all other figures have been arrived at, the investigation of its properties has always been held of primary importance. Of the immense number of results obtained by investigation, we notice only two or three. The lines joining the angles of a T. with the points of bisection of the opposite sides, intersect at the same point as also do the perpendiculars from the angles on the opposite sides, the lines bisecting the angles, and the perpendiculars from the middle points of the sides. The point of intersection of the first series of lines is the centre of gravity of the T.; those of the third and fourth series are the centres of two circles, the former of which touches the sides internally, and the latter passes through its three angular points. Another remarkable property of triangles, known as Napoleon's problem, is as follows: if on any T. three equilateral triangles be described, and the centres of gravity of these three be joined, the T. thus formed is equilateral, and has its centre of gravity coincident with that of the original T: see TRIGONOMETRY: HYPOTENUSE. The area of a T. is half of that of a parallelogram which has the same base and altitude, and is thus equal to half the product of the base into the altitude; it may be expressed also by the formula $\sqrt{S(S-a)(S-b)(S-c)}$, where a, b, c, are the lengths of the sides, and S is half their sum.

In the geometry of the sphere, a T. is a figure bounded by three arcs of circles (as F, G, H, K, L, and M).

TRIAN'GLE OF FORCES: in mechanics, a proposition which is merely a formal modification of the *Parallelogram of Forces* (q.v.), and as generally stated, is its converse. The parallelogram of forces enunciates that, if two forces, P and Q (fig.)—represented in direction and magnitude by AB and AC—inclined at an angle to each other, act on a point A, their resultant, R, is represented in direction and magnitude by the diagonal, AD, of the parallelogram formed on the two lines AB and AC. Now, as the resultant, R, is equivalent to the combined action of P and Q, it would exactly counterbalance them if acting in the opposite direction AR′, but would still be fully represented by the diagonal line AD, taken as from D to A. Also, instead of AB, CD may be taken to represent P. Hence as the sides of the triangle ACD completely represent the three forces, we have the proposition, *that if three forces in the same plane be in equilibrium on a particle, and if in that plane any three mutually intersecting lines be* *drawn parallel to the directions of the forces, the lengths of the sides of the triangle thus formed will be proportional to the magnitudes of the forces.* Its proof rests on the previously ascertained fact, that R′, P, and Q, three equilibrating forces at A, are proportional to AD, CD, AC; and on the geometrical theorem, that a triangle whose sides are respectively parallel to those of another triangle, has its sides proportional to those of the latter; consequently, the ratio and relative direction of the forces R, P, and Q, are fully represented by *ad*, *cd*, and *ac*, the sides of the triangle *acd*. Again, as the sides of a triangle are to one another as the sines of the opposite angles, so also are the forces which the sides represent. Hence



$$P : Q : R' :: CD : AC : AD$$
$$:: \sin. CAD : \sin. ADC : \sin. ACD$$
(and substituting the sines of the supplementary angles)
$$:: \sin. QAR' : \sin. PAR' : \sin. PAQ;$$
that is, each force is proportional to the sine of the angle between the directions of the other two.

TRIANGULA'TION: operation of dividing any portion of the earth's surface into triangles of as large size as possible, which may be called primary, and which must be afterward subdivided into smaller triangles, forming a great network of secondary or subsidiary triangles, which serve as a means of working down from great to less, and finally completing, by a system of scientific checks, an accurate map or delineation of the region covered by such triangles, forming the geodesical process called a trigonometrical survey: see Trigonometrical Survey: Ordnance Survey: Geodesy. The same operation is used in the measurement of an arc of the meridian for ascertaining the length of a degree of latitude or longitude on any part of the earth's surface; but in this case, only primary triangles are necessary, as no topographical detail is required, and the positions of the apexes of the triangles are astronomically fixed in the most careful manner, which is not always done in the triangles of a trigonometrical survey.

In carrying out a system of T., much judgment and an accurate local knowledge of a country are necessary; and it often happens that a more extensive range of angles can be obtained from a comparatively low station than from the tops of the highest mountains. The angles of each triangle should be as near equal as possible, and unless local circumstances render it unavoidable, very acute or obtuse angles should not be used. The sides of the primary triangles should be as long as can be conveniently observed, but in practice they vary from 80 m. or more to 4 m., or even less. The angles are generally determined by a large theodolite, of as simple and strong construction as possible, fixed on the most elevated points of mountain-ranges, etc. When the apexes of the triangles are very distant, heliostats, or mirrors reflecting the sun's rays, are often used, and in dark or cloudy weather the Drummond light has been employed. The primary triangles being fixed on the spherical surface of the earth, certain formulæ, according to the rules of spherical trigonometry, must be applied to reduce them to the simple calculations for ascertaining, from certain known data, the sides and angles of plane triangles. The whole of those calculations are dependent on the accurate measurement of a base or fundamental line. The length of base-lines used in modern surveys varies from 3 to 7 m. At the end of a large T., a second or testing base-line is always measured at a distance from the original one; if the measured length of this agrees with that ascertained by calculation, it may be considered a proof of the accuracy of the work in general.—See art. 'Celestial Measurings and Weighings,' by Sir John Herschel, *Good Words* (1864).

TRIARCHY, n. *trī'ăr-kĭ* [Gr. *treis*, three; *archē*, government]: government by three persons.

TRIAS, n. *trī'ăs*, or TRIASSIC SYSTEM, *trī-ăs'sĭk* [Gr. *trias*, the number three, a triad]: in *geol.*, a triple series, the oldest of the Mesozoic period, formerly associated with the Permian rocks under the name New Red Sandstone (q.v.), so called by German geologists because they are separable into three distinct formations: the Keuper, Muschelkalk, and Bunter Sandstein; and the name has been generally adopted, as the beds are more fully developed in Germany than elsewhere. The German beds have consequently been accepted as types of the group. The typical beds are divided into—1. Keuper (q.v.), with a maximum thickness of 1,000 ft.; 2. Muschelkalk (q.v.), with a maximum thickness of 600 ft.; 3. Bunter Sandstein (q.v.), with a maximum thickness of 1,500 ft.—In the United States, the Jurassic is distinct in the far west, but in the east, where the red sandstone occurs from the Connecticut river valley southwestward, the Trias is not clearly distinguished from the succeeding Jurassic, and hence has been called the Jura-Trias. TRIAS'SIC, a. pertaining to or composed of trias.

TRIATOMIC, a. *trī-ă-tŏm'ĭk* [Gr. *treis*, three, and Eng. *atomic*]: possessing or consisting of three atoms.

TRIBASIC, a. *trī-bā'sĭk* [Gr. *treis*, three; *basis*, a base]: in *chem.*, requiring three molecules of base to one of the acid to form a neutral salt: thus, citric acid is *tribasic*.

TRIBE, n. *trīb* [L. *tribus*, a tribe—from *tres*, three, being one of the *three* original great divisions of the Roman people: F. and It. *tribu*, a tribe: Gael. *treubh*, a tribe, a clan]: a family or race existing distinct from others; any class or distinct portion of a people; a number of things having certain common characteristics; a division between order and genus; a group of genera subordinate to an order; a body of rude or savage people under one chief. **TRIBAL**, a. *trī'băl*, belonging to a tribe. **TRI'BALISM**, n. *-ĭzm*, the state of tribal existence.

TRIBE: an aggregate of stocks—a stock being an aggregate of persons considered to be kindred—or an aggregate of families, forming a community usually under the government of a chief. The chief is possessed of despotic power over the members of the T. It is commonly said that he has 'patriarchal' power—such power, that is, as fathers in early times exercised over their children. The T. has been the earliest form of the community among all the races of men.

In a very large proportion of existing tribes, the T. is an aggregate of several stocks or distinct bodies of kindred. The persons of whom the T. consists are included in stocks which are, or are accounted, distinct. This organization is sustained by two tribal customs—(1) persons of the same stock are forbidden to intermarry; and (2) kinship is reckoned through females only, so that children are accounted of the stock of their mother. Persons of the same stock, too, owe duties to each other, and are to some extent sharers in each other's liabilities. Thus, an injury done by a man is an injury done by his stock, which may be avenged upon any member of it; an injury done to a man is an injury done to his stock, for which every member of it is bound to seek vengeance. In consequence of the customs above mentioned, a husband must be of a different stock from his wife or wives; he must therefore be accounted of a different stock from his children; and when he has wives of different stocks, their respective children are accounted of different stocks. More than one stock is thus represented in every household; and since a man owes duties to his stock—the duties of acknowledged blood-relationship—while to those of his family who are not of his stock nothing but the accident of birth (only accident) unites him, the family among these tribes has necessarily little cohesion. The tribal customs which have been referred to largely ignore the family; they are founded on the idea of stock. They are the customs of people with whom the conception of stock was a powerful social influence when that of the family was impotent; and it follows that the family, as now existing among these tribes, has *grown* among them. Now, in many cases the only obstacle to its rapid development is the firm hold which the idea of stock has taken of the tribal life. On the other hand, the prevalence of customs founded on the idea of stock proves a prior existence of stocks or bodies of kindred: the separation into stocks must be older than the customs, at least as customs associated with the idea of stock. And keeping this in view, and considering how difficult it is to conceive of several stocks herding together at the early time when every stranger was an enemy, unless there was some natural connection between them—such a connection as the marriage-law and the system of kinship, when they arose, would establish—it may be concluded that each stock was originally a separate tribe.

This is made the basis of what is called the development theory of the T. (see *Primitive Marriage*, by J. F. McLennan, 1865), which is the theory outlined below. Into the T. conceived of as a single stock, the marriage-law and system of kinship would gradually bring a variety of neighboring stocks; and thus the T. would become what it is—an aggregate of stocks. The progress of such tribes appears to have been from the T. conceived of as a group of kindred to the T. consisting of several stocks or groups of kindred; and now, though the family is not yet fully developed among them, they seem to be tending to become aggregates of families. The tribes of Australasia are the most perfect examples of the organization above described; but it exists (or existed) also among the tribes of N. America and most of those of S. America, among a majority of the known tribes of Africa and a large proportion of the ruder tribes of Asia.

Suppose male kinship (which must come with the growth of the family) introduced among tribes such as have been spoken of, containing different stocks. First, the stocks existing within the T. would be fixed, stereotyped, within it; second, the growth of the family would be greatly promoted, and the influence of the idea of stock proportionately diminished. The family would in time rise to the importance originally possessed by the stock; and at length the T., still divided into stocks, would become, politically, an aggregate of families. The T. would thus assume the exact shape which it had in the early ages of Greece and Italy, when it was an aggregate of families included in clans or bodies considered kindred (*gentes*)—the exact shape which it now has among the most advanced existing tribes. Since the T. of the Australian type might thus develop into a T. of the classical type, is it not probable that the latter really was the result of such a development? Regarded as a hypothesis, this view will be found to fulfil all the conditions of a good hypothesis. And if the circumstances of tribes which have what is popularly termed the marriage-law of caste—among the greatest of which a division corresponding to the Roman *gens* prevails—can be reconciled with it, or with an extension of it, we shall have reached a hypothesis capable of explaining the formation of tribes in general. The tribes above referred to, whether divided into clans or not, consider themselves of a common stock. They restrict marriage to the stock; but they always forbid marriage within certain degrees of relationship; and in numerous cases—among them, those of the most numerous caste peoples—they also forbid marriage within the clan or body considered peculiarly kindred. It will be convenient, for want of a better word, to speak of this marriage-law as caste. And by caste tribes, in what follows, are meant tribes which have this marriage-law.

Seeing that the law forbidding marriage within the T. (now generally known as the system of *Exogamy*), and the law restricting marriage to the T., have been widely prevalent among human races, both must be conventional, produced by circumstances; and if in their origin they are equally ancient, men, at the first, in respect of their circumstances, must long have been divided into two bodies very differently placed. This, however, is very improbable. There is no evidence for it; there is some evidence against it. The circumstances, too, capable of producing caste must have been isolating circumstances; and it is difficult to conceive of these operating in the earliest times. For various reasons it is probable that caste did not prevail in the earliest times—was not the original law of any tribes. Of these reasons a specimen is found in the law of incest which prevails among the greatest of caste peoples, by which marriage is forbidden, not only within certain degrees of relationship, but also within the clan or body of kindred denoted by a family name. The existence of any law of incest among a caste people requires explanation. But how could a prohibition of marriage within the clan arise among people whose principle it was to marry within the kindred? This can be referred only to circumstances which preceded the origin of caste. Does it not, then, suggest the establishment, through the force of isolating circumstances, of caste—the restriction of marriage to the T. or to particular tribes—among tribes divided into stocks which had forbidden marriage within the stock? This would, at any rate, account for the facts. The original prohibition, on this view, is still represented by the prohibition of marriage within the clan. But as tribes advanced, the family usurped the place of the stock; there sprang up a belief in the common origin of the T.; and the law of succession to family property gave a new importance to near relationships. The law of incest would naturally tend to follow the practically important limits of relationship.—This hypothesis of development is thus capable of connecting together all the varieties of the T., the simplest with the most advanced. Illustrations of this hypothesis are drawn from several different lines of facts, of which the following is one. It is claimed as the received opinion that, among the advanced tribes containing gentes, property was originally vested in the gens, and was only by slow degrees wrested from it by the family. It is involved in this, that at one time the gens was everything, the family nothing, in the organization of the T.; that the family grew, and that, as it grew, the T. sank in importance. The T., when property was exclusively vested in its gentes, must have been an aggregate of gentes, not of families. All this is corroboratory of the hypothesis of development; in particular, it strongly corroborates the view that the T. at an early period consisted of several bodies of kindred, accounted distinct from each other, and each of which held property in common. It has never been accounted for on any other view.

The only other theory which has been formed of the origin of tribes—and till recently almost universally received—is the patriarchal theory. This, briefly stated, is that a T. consists in the main of the descendants of a single family, descent being chiefly, if not exclusively, reckoned through males; and that the gentes found within the tribe consist of the descendants of individual sons or grandsons of the common progenitor. It is alleged by some that this theory does not explain the organization of the numerous class of tribes first considered. It has been formed on observation of the advanced tribes of the classical type, but it does not consist with the history of property (to test it at a single, but a vital, point) even among them. It might account for property being vested in the T.; it does not account for it being vested in the gentes. It can do so only by the assumption that, though the sons and grandsons of the original progenitor had the desire for family property, and divided his property, or accumulated property of their own, their descendants suddenly lost that desire, and began to hold in common. It is claimed that the patriarchal theory is excluded also in the case of all polyandrous peoples, for that theory assumes that society began with monandric marriage, a perfect idea of the family and male kinship—all conditions the very opposite of those which must at one time have prevailed among such peoples. But this last statement, it must be noted, involves at least as great an assumption as is involved in the theory which it opposes.

TRIBLET, n. *trĭb'lĕt*, or **Triboblet**, n. *trĭb'ō-lĕt* [F. *triboulet*]: a goldsmith's tool used for making rings; a steel cylinder round which metal is bent in the process of forming tubes, nuts, etc.

TRIBOMETER, n. *trĭ-bŏm'ĕ-tĕr* [Gr. *tribein*, to rub; *metron*, a measure]: an instr. for ascertaining the degree of friction in rubbing surfaces.

TRIBONIAN, *trĭ-bō'nĭ-an* (**Tribonia'nus**, *-ā'nŭs*): eminent Roman jurist of the 6th c.: b. Pamphylia, of Macedonian parentage; died A.D. 545. He held, under Emperor Justinian, the offices of quæstor, master of the imperial household, and consul; but he is famous chiefly through his labors in connection with the Code (q.v.) of Justinian (q.v.) and the Pandects (q.v.).

TRIBRACH, n. *trī'brăk* [Gr. *treis*, three; *brachus*, short]: in *poetry*, a foot of three short syllables, two of which belong to the thesis and one to the arsis, or *vice versa*.

TRIBULATION, n. *trĭb'ū-lā'shŭn* [F. *tribulation*—from mid. L. *tribulātiō* or *tribulātiōnem*, distress—from *tribŭlum*, a sledge for rubbing out corn, consisting of a broad beam of wood studded underneath with sharp pieces of flint or with iron teeth, used in threshing grain: literally, a thresher]: that which occasions distress or vexation; severe affliction; great grief, sorrow, or suffering.

TRIBUNE, n. *trĭb′ūn* [L. *trĭbūnus*, the chief of a tribe, a commander—from *tribus*, a tribe: It. *tribuno:* F. *tribun*]: among the *anc. Romans*, an officer or magistrate chosen by the people to protect them from the oppression of the nobles, and to defend their liberties (see ROME—Ancient Italy: also PLEBEIAN: PATRICIAN); a rostrum or elevated platform from which speeches are delivered, as in the French assembly. **TRIB′UNARY**, a. *-ū-nă-rĭ*, of or pertaining to tribunes. **TRIB′UNESHIP**, n. *-shĭp*, the office of a tribune; also **TRIB′UNATE**, *-ūn-āt*. **TRIBUNAL**, n. *trī-bū′-năl* [L. *tribūnal*, a raised platform on which the seats of magistrates were placed: F. *tribunal:* It. *tribunale*]: a bench or raised seat of a judge; a court of justice. **TRIBUNITIAL**, a. *trĭb′ū-nĭsh′ăl*, or **TRIB′UNI′CIAN**, a. *-ăn*, pertaining to tribunes; suiting a tribune.

TRIBUTE, n. *trĭb′ūt* [L. *trĭbūtum*, a stated payment—from *tribŭō*, I allot, I bestow—from *tribus*, a tribe: It. *tributo:* F. *tribut*]: a stated sum or a valuable consideration of some kind paid annually by a conquered or subject state to a superior as an acknowledgment of submission, or as a price for peace or protection; a personal contribution; anything given as a token of esteem. **TRIB′UTARY**, a. *-ū-tĕr-ĭ*, paying tribute; subject or subordinate; yielding supplies of anything: N. a state that pays tribute to a superior; any stream which, directly or indirectly, contributes water to another stream. **TRIB′UTARINESS**, n. *-nĕs*, state of being subject or tributary.—SYN. of ‘tribute’: tax; impost; rate; duty; custom; assessment; cess; due; toll; charge; levy; subsidy.

TRICAPSULAR, a. *trī-kăp′sū-lĕr* [L. *tres*, three; *capsŭla*, a little chest]: in *bot.*, having three capsules.

TRICE, n. *trīs* [Sp. *tris*, noise made by the breaking of glass, an instant: comp. Scot. phrase ‘in a *crack*’]: an instant; a moment; a very brief space of time; a ‘jiffy.’ **WITHIN** or **IN A TRICE**, in a very short time.

TRICE, v. *trīs* [Sw. *trissa;* Norw. *triss;* Dan. *tridse*, a pulley: Low Ger. *drysen*, to hoist]: to hoist aloft; to haul up and secure by means of a small rope. **TRIC′ING**, imp. **TRICED**, pp. *trīst*.

TRICENNIAL, a. *trī-sĕn′nĭ-ăl* [L. *tricēni*, thirty at a time, thirty each; *annus*, a year]: belonging to or noting the number thirty; occurring once in thirty years. **TRICEN′TENARY**, n. *-tĕ-nĕr-ĭ* [L. *tricenti*, three hundred]: a period or space of three hundred years; a day commemorative of any event which took place three hundred years before: also **TERCENTENARY** (q.v.).

TRICEPS, n. *trī′sĕps* (L. *tres*, three; *caput*, a head]: in *anat.*, the three-headed extensor muscle of the arm.

TRICH′ECUS: see **MORSE**.

TRICHIASIS, n. *trĭ-kī'ă-sĭs* [Gr. *thrix* or *tricha*, hair]: a disease of the eye in which some of the hairs of the eyelash turn in upon the eyeball and produce irritation, the other hairs retaining their natural position. This disease is exceedingly common among the lower classes, especially of the Irish. This affection causes great annoyance, by exciting a pricking sensation, and a constantly irritable and watery state of the eye. The treatment consists in plucking out the offending hairs (if they are few) from time time, each hair being removed by hair-forceps with a slow steady pull. If they form a little group, they must be removed by dissecting out the small portion of lid in which they are implanted, and uniting the wound with a suture. In other cases it may be necessary to remove the entire margin of the lid.

TRICHIDIUM, n. *trĭ-kĭd'ĭ-ŭm* [Gr. *thrix* or *tricha*, hair; *eidos*, resemblance]: in *bot.*, a filamentous organ resembling a netted purse, in which the spores of certain fungi are included.

TRICHINA, n. *trĭ-kī'na*, plu. TRICHI'NÆ, *-nē* [Gr. *thrix* or *tricha*, hair]: a minute parasite or worm, infesting, in the adult state, the intestinal canal, and in its larval state the muscular tissue, of man and certain mammals, especially the hog: more fully called *Trichina Spiralis* (q.v.). TRICHINIASIS, n. *trĭk'ĭ-nī'a-sĭs*, or TRICH'INO'SIS, n. *-ĭ-nō'-sĭs*, disease produced by trichinous meat; the disease of trichinous meat (see below). TRICH'INOUS, a. *-ŭs*, producing or produced by trichinæ; relating to the disease trichiniasis.

TRICHINA SPIRALIS, *trĭ-kī'na spī-răl'ĭs:* peculiar nematoid worm, which, in its sexually immature state, inhabits the muscles, usually of the pig. It was discovered 1835—the demonstrator of anatomy at St. Bartholomew's Hospital, London, giving to Prof. Owen four microscopic specimens of speckled muscle from a subject then in the dissecting-rooms. Paget, then a first-year's student, simultaneously investigated the question, and read a paper on the subject to the Abernethian Soc. a week before Prof. Owen's memoir was read to the Zoological Soc. Prof. Owen, to whom the discovery of the T. is generally referred, in communicating to the Zoological Soc. his 'Description of a Microscopic Entozoon infesting the Muscles of the Human Body,' describes the speckles as capsules containing a spirally-coiled microscopic worm. To this worm he gave its name, T. S. From the date of this discovery to the present time, the T. S. has been a source of discussion. In 1845, the idea was advanced by various naturalists that it was the undeveloped or sexless form of some other worm; and 1855 (after the transformation of the cysticercus into the tapeworm was discovered), various suggestions were made on this subject; but it was not till 1860 that Virchow and Leuckart, by feeding animals on flesh containing trichinæ, arrived independently at the correct conclusion, that the parents of the encysted trichinæ are small nematoid worms, which had never previously been described, Leuckart's experiménts being made with human flesh containing these parasites. See **Nematoidea: Nematelmia.**

The young trichinæ, as they are seen in the human muscles, present the form of spirally-coiled worms, in the interior of small, globular, oval, or lemon-shaped cysts, which appear as minute specks scarcely visible to the naked eye. These cysts are more or less covered externally with calcareous matter, according to the time during which they have remained fixed, and the degree of degeneration which their walls have undergone. The T. measures, according to Cobbold, on an average $\frac{1}{75}$ of an inch in length, and $\frac{1}{150}$ of an inch in breadth. The cysts are sometimes altogether absent; hence they must be regarded as abnormal formations, resulting from local inflammation set up by the presence of the worm, which in this larval condition of existence measures $\frac{1}{25}$ of an inch in length, and $\frac{1}{250}$ of an inch in breadth. These larval worms show a well-marked digestive apparatus, and reproductive organs often sufficiently developed to enable the observer to determine the sex. The number of larval trichinæ that may simultaneously exist in the muscles of a single man or animal is enormous. In a cat on which Leuckart experimented, a single ounce of flesh was estimated to contain 325,000 trichinæ; and if all the voluntary muscles of a human body of ordinary size were similarly affected, the number of worms would exceed 1,950 millions. Dr. Cobbold believes that there can be no doubt that the number in a single 'bearer' (as he terms the sufferer) may *actually* amount to at least 20,000,000.

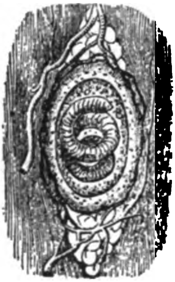
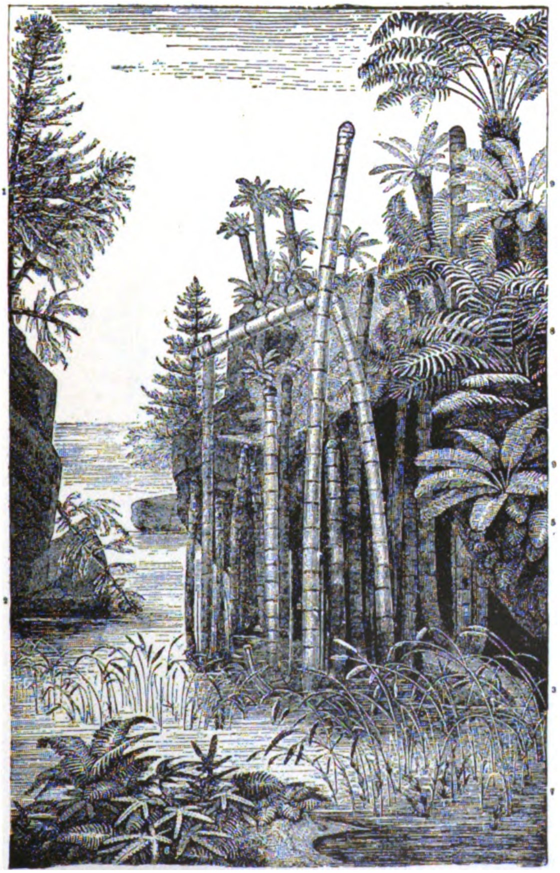


Fig. 1.—The worm lying coiled up in muscle, the outside of the cyst supporting fatty tissue, vessels, etc. (magnified).

We proceed to consider the mature worms. When an animal is fed with flesh containing the larval worm above described, and is killed a few days afterward, a large number of minute worms are found mixed with the contents of the small intestines. On closer examination, they are found of two kinds—the larger and more numerous ones being the females, and the smaller and rarer ones the males. At the second day after their introduction, these intestinal trichinæ attain full sexual maturity; and in six days, the females contain perfectly developed and free embryos in their interior.

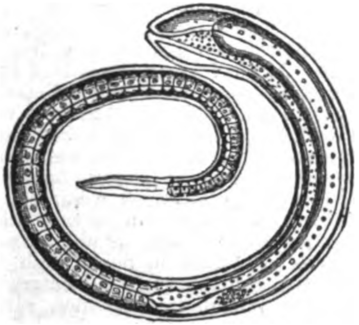
The female is a slender round worm, varying in length from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch. The anterior end presents a bead-like appearance, from which the intestinal canal proceeds. The posterior three-fourths are mainly occupied by the reproductive organ, which is filled partly with free embryos, and partly with eggs in various stages of maturity. When these embryos have attained their full size within the uterus of the parent, they pass out at the genital aperture, and commence life on their own account. They

PLATE 5. Triassic Formations



Plants of the Keuper Beds, restored. Vol. 30

are little worms with rounded ends, and present no indications of any internal organs. The male worm is seldom more than two-thirds the length of the female. It presents the same bead-like arrangements as the female, and a reproductive organ whose aperture apparently coincides with the anus; while the female sexual aperture is comparatively near the head-end of the worm. The body terminates with two hooks, doubtless subsidiary to the reproductive process. The males are less numerous and shorter-lived than the females, and probably die after having discharged their natural function. The females continue bringing forth young for two or three weeks. The embryos, according to Leuckart, Cobbold, and all leading helminthologists, penetrate the walls of the intestine, and pass directly into the muscles of their 'bearers' or 'hosts,' where, if the conditions are otherwise favorable, they are developed into the form originally observed by Owen and Paget. In this way, by proceeding along the course of the intermuscular connective tissue, some reach the muscles of the extremities and other distant parts; but the majority of the wandering embryos (according to Virchow) 'remain in those sheathed muscular groups which are nearest to the cavity of the body (abdomen and thorax), especially in those which are smaller and most supplied with connective tissue.' These embryos penetrate into the interior of the separate muscular bundles, and in the course of 14 days acquire the size and organization of T. S. The surrounding tissues soon become disorganized, and the spot inhabited by the coiled-up worm is converted into a spindle-shaped widening, within which the previously described cyst is formed by a hardening and calcification of the exterior. A point of great importance in relation to the distribution of this parasite, and as having a practical bearing on the disease known as *Trichiniasis* (q.v.), has been established by the experiments of Davaine—viz., that while in the adult condition, trichinæ perish in cold water in about an hour, and cannot survive the decease of their host more than six



Sexually mature female *Trichina spiralis* (highly magnified).

hours, the larvæ remain alive in water for a month, and will live for a long time in flesh which has become putrid. In this way, 'a carcass near a marsh or rivulet may communicate the parasites to the ruminants that drink the water, or to pigs.'

In the same year (1860) in which Virchow and Leuckart proved that by feeding an animal on flesh containing the T. S., intestinal trichinæ were produced, and watched the transformation of the young of the latter into muscular trichinæ, a very important corroborative medical case was observed and recorded by Zenker. In this case, the patient was a servant-girl, aged 20, and the principal symptoms were loss of appetite, prostration, violent pains and contraction of the limbs, and finally œdema, which, with a certain amount of pneumonia, terminated fatally in a month. After death, numerous larval trichinæ were found in her muscles, while the intestinal canal contained sexually mature worms. Three weeks previously, before the girl had become ill, she had assisted in killing pigs and making sausages. It was further ascertained that, a few days before her illness commenced, she had eaten some of the meat in a raw state. On examination, it was found that the pork (both hams and sausages) contained numerous encysted trichinæ. It was ascertained also that the butcher and several members of the girl's family (to whom she had probably given sausages) were attacked with symptoms similar to those which, in her case, proved fatal. How the pig acquires its trichinæ is unknown; but that the larval trichinæ contained in putrid flesh, etc., may easily gain admittance to the pig's alimentary tract, is a supposition entirely probable. Beet-root, earth-worms, moles, and rats have been suggested as their infectors; but on this subject see the advice given by the French commissioners, under TRICHINIASIS. The adult T. S. is liable to infest the intestinal canal of all animals in which the larvæ have been found in the muscles. In this category must be placed man, the dog, cat, rabbit, rat, mouse, mole, hedgehog, and badger. Whether birds ever contain trichinæ is doubtful: reptiles and fishes are free from this parasite.

TRICHINIASIS, *trĭk-ĭ-nī'a-sis:* diseased condition induced by ingestion of food containing *Trichina spiralis* in large quantity. The first recorded case in the human subject is that of Zenker (see TRICHINA SPIRALIS), but there can be no doubt that the disease has long existed, though its origin was previously unsuspected. (An obscure case had been noted, but not investigated, in England 1835.) The first symptoms in the human subject are loss of appetite, followed by nausea and a sense of fatigue, prostration, and general indisposition: this stage lasts about a week. Pain and stiffness of the limbs, accompanied by swelling of the face, and fever of a peculiar type, characterized by very frequent pulse, moderate thirst, and copious perspirations, now show themselves; the beginning of the second stage being thus synchronous with the migration of the trichina-brood into the muscles, there to become encysted. During this stage, pressure, or any attempt to move the parts under the control of the swollen muscles, is intensely painful, and even the normal respiratory movements cause such constant pain as to render sleep impossible. In severe cases, the patient lies on his back like a paralyzed person. The tongue presents much the same appearance as in ordinary gastric fever. The bowels are usually constipated, though in some of the worst cases there is continuous diarrhea. The swelling which began in the face disappears, and is replaced by swelling of the feet, which gradually rises to the trunk. In about the fourth week of the disease, the trichinæ may be regarded as permanently settled, and as having completed their destructive action on the muscles. This is the beginning of the third stage, characterized mainly by extreme weakness. The gastric symptoms abate, the appetite returns, and, in favorable cases, the muscular pains and swelling gradually diminish; while, in severe cases, this third stage is the most dangerous part of the disease; the diarrhea being severe, and accompanied with tenesmus, and often with involuntary discharges of the fæces and urine, while the skin exhibits extreme pallor, and is enormously distended with effused serum. Moreover, pneumonia often supervenes at this period. The fourth and last stage is that of convalescence. This may begin at the fifth week, or later, and may last from three weeks to three months. In mild cases, it is impossible to draw a definite line between this and the preceding stage. Death may occur at any period. It has been observed as early as the 5th, and as late as the 42d, day of the disease. A single trichinous pig, if its flesh is eaten without being previously submitted to such culinary processes as to destroy the vitality of the larval trichinæ, may establish a local epidemic of this disease. The most important of those epidemics have occurred in Germany, and are noticed by a German physician, Dr. Thudichum, in 'The Seventh Report of the Medical Officer of the Privy Council,' 1865. Of these, the second or great epidemic at Hettstädt was the most severe. It began 1863, Oct., and affected 158 persons, of whom 28 died. All these were found to have been eating trichinous pork, either entirely raw, or in the form of smoked or fried sausage, meat-balls, brawn, black-pudding, etc. The only safe rule is not to eat pork in any form unless it is known to be thoroughly cooked. In the United States the disease most often occurs among the German population, from eating raw ham, or sausages containing pork insufficiently cooked.

As soon as a case of suspected T. comes under the notice of the physician, attempts should be made to remove the mature worms from the intestine by active purgation. For this purpose, calomel, in scruple doses, is more serviceable than any other purgative. Two or three such doses should be given at intervals of 24 hours. No special directions can be given for treatment of the fever. If there is any appetite, the diet should be light but nourishing. Liebig's extract of meat has been found serviceable in keeping up the strength. The most effectual remedy for the sleeplessness has been the cold wet sheet, in which the patient should be wrapped repeatedly during the day. The preparations of opium only aggravate the discomfort. The other symptoms must be treated by the ordinary rules of therapeutics.

Considering the gravity of this disease, it would be important to be able to decide, during a pig's life, whether it were trichinous or not. On this point there is some difference of opinion; but Professors Delpech and Reynal, charged by the French govt. to report on this disease, assert that 'the animal, while living, shows no signs of the presence of trichinæ, nor can they be detected in the meat with an ordinary lens, but a powerful microscope renders them at once visible.' In Hanover, out of 25,000 pigs, 11 were found trichinous; in Brunswick, 16 were affected out of 14,000; in Blakenburg, 4 out of 700. The French commissioners assert that a temperature of 167° F. is sufficient to kill the parasites, and that meat thoroughly salted is also perfectly safe; they advise that smoke-dried sausages, though probably safe, should be well boiled. They further attribute the spread of the disease among pigs to the fact that they are foul feeders, and will eat any offal, such as the dead bodies of rats and other animals, which are known to be liable to the disease. They recommend farmers to be very cautious in feeding their pigs to avoid giving them flesh without first boiling it; to destroy rats and small carnivorous animals, and never to leave human or other excrements in places where pigs can reach them. Finally, they advise all experimenters to burn trichinous flesh when their investigation is completed, and not to throw it away; for a fragment of it might be eaten by a rat, the rat devoured by a pig, and the pig thus become the medium of the disease to man. In 1863, a trichinous pig from Valparaiso, killed on board a merchant-vessel on the high seas, caused the death of two of the crew; and there have been slight local trichinous epidemics in the United States. Probably T. is a common ailment in many countries; its symptoms, except in very severe cases, attracting no special notice, because of their similarity to those of rheumatic disease and acute febrile attacks. Helminthology, and the detection of parasites of all kinds, still require much investigation by the medical profession.

TRICHINOPOLY, *trĭch-ĭn-ŏp'o-lĭ* (correctly, TRICHINAPALLI): city, cap. of the collectorate of T., in Brit. India; on the right bank of the Kaveri, 30 m. w. of Tanjur. The fort, which includes the old town, stands on the rugged slope of a steep granite rock, 500 ft. high. The walls of the fort, now demolished, had a circuit of 2 m.; and this area is inhabited by a dense population, dwelling in low, closely packed huts. The streets are crowded at all hours of the day with passengers, bullock-carts, and cattle. Beyond the walls is St. John's Church, containing the tomb of Bp. Heber, who was buried here 1826. The climate during eight months of the year is exceedingly hot; nevertheless T. is the headquarters of the s. division of the

Madras army; there are several barracks, and the lines for the men and the officers' houses cover a space 6 m. in circumference. Cheroots are manufactured in large quantity, from excellent tobacco grown in the vicinity. Manufactures of hardware, cutlery, and jewelry, especially gold chains, harness, and saddlery, are extensively carried on. A railway to Madras was opened 1875.—Pop. (1881) 76,500: (1891) 90,730.—The *district* of T. has 3,561 sq. m.: pop. (1891) 1,519,306.

TRICHOCEPHALUS, *trĭk-ō-sĕf'ă-lŭs* [from Gr. *thrix*, gen. *trichos*, a hair; *cephale*, the head]: genus of intestinal worms, of which one species, *T. dispar* (described by the older writers, who mistook its head for its tail, as *Trichuris* and *Ascaris trichiura*), infests the human intestinal canal. Dr. Cobbold describes it as a small nematoid worm, the male 1¼ inches long, and the female fully 2 inches: it is characterized by an extremely long hair-like head and neck, occupying about two-thirds of the entire length. This parasite is comparatively rare in this country; while, according to Davaine, not less than one-half the inhabitants of Paris are infested by it. Its presence is attended with little or no inconvenience. Its development and mode of access into the body are not yet clear. Davaine finds that the eggs are not developed within the host's intestines, but are discharged *per anum*, in the immature condition in which they escape from the parent; and it further appears that after their expulsion a period of six months must elapse before embryonic formation commences. As in the more common instance of *Ascaris lumbricoides*, it is probable that they complete their development in open water, from which they are transferred to the human stomach.

TRICHOGENOUS, a. *trī-kŏj'ĕ-nŭs* [Gr. *thrix* or *tricha*, hair: *gĕnnăō*, I produce]: productive of hair.

TRICHOGYNE, n. *trĭk'ō-jīn* [Gr. *thrix* or *tricha*, hair; *gunē*, a woman]: a receptive organ concerned in the sexual reproduction of certain algæ.

TRICHOLOGY, *n*. *trī-kŏl'ō-jĭ* [prefix *tricho-*; Gr. *logos*, a discourse]: the study of human hair, with a view to the prevention of baldness. TRICHOLOG'ICAL, a. *trĭk-ō-lŏj'ĭk-al*, of or pertaining to trichology. TRICHOLOGIST, n. *trĭ-kŏl'ō-jĭst*, one who makes a scientific study of hair.

TRICHOME, n. *trĭk'ōm* [Gr. *trichōma*—from *thrix* or *tricha*, hair]: in *bot.*, any structure, such as a hair, originating as an outgrowth of the epidermis.

TRICHOPTERA, n. *trī-kŏp'tĕr-ă* [Gr. *thrix* or *tricha*, hair; *ptera*, plu. of *pteron*, a wing]: a sub-order of neuropterous insects; the caddis-flies (see CADDICE). TRICHOP'TERAN, a. *-tĕr-ăn*, or TRICHOP'TEROUS, a. *-ŭs*, hair-winged, as the caddis or case-worm flies.

TRICHORD, n. *trī'kawrd* [Gr. *treis*, three; *chordē*, a string]: a three-stringed lyre: ADJ. having three strings; said of an improved pianoforte, each note of which has three strings for the greater part of its compass.

TRICHOTOMOUS, a. *trī-kŏt'ō-mŭs* [Gr. *tricha,* in three parts; *tomē,* a cutting]: divided into three parts or into threes. TRICHOT'OMY, n. *-mĭ,* division into three parts.

TRICK, n, *trĭk* [Dut. *trekken,* to pluck, to draw; *trek,* a trick: Ger. *streich,* a stroke, a trick: F. *tricher,* to cheat: in meaning 'to dress or adorn,' perhaps from W. *trec,* gear, harness]: any fraud or underhand scheme to impose upon others; something done to cheat or deceive; a vicious practice; practice or habit, as, 'he has a *trick* of winking;' a sly artifice by way of amusement; a frolic; the dexterous artifice of a juggler; a parcel of cards falling to a winner at one round of play: in *sailors' slang,* a spell of work, as at the helm; a turn; a shift: in *her.,* mode of representing arms by sketching them in outline, and appending letters to express the tinctures, and sometimes numerals to indicate the repetition of changes: V. to deceive; to impose on; to defraud; to dress or adorn fantastically, with *out,* as, 'she was *tricked out* in all her finery.' TRICK'ING, imp.: ADJ. cheating; deceiving; defrauding: N. in *OE.,* dress; ornaments. TRICKED, pp. *trĭkt.* TRICKER, n. *trĭk'ėr,* one who cheats; also TRICK'STER, n. *-stėr.* TRICK'ERY, n. *-ėr-ĭ,* artifice; deceit; the art of dressing up fantastically. TRICK'ISH, a. *-ĭsh,* given to deception and cheating. TRICK'ISHLY, ad. *-lĭ.* TRICK'ISHNESS, n. *-nĕs,* quality of being trickish or deceitful. TRICK'Y, a. *-ĭ,* artful; cunning. TRICK'INESS, n. *-ĭ-nĕs,* quality of being tricky. TRICKSY, a. *trĭk'sĭ,* very artful; full of tricks; elegantly quaint. TRICK'SINESS, n. *-nĕs,* artfulness; playfulness: quaintness.—SYN. of 'trick, n.': stratagem; fraud; wile; cheat; juggle; finesse; imposition; delusion; imposture; deception; sleight; artifice; subterfuge; antic.

TRICKLE, v. *trĭk'kl* [W. *treiglo,* to roll or trickle: Scot. *trigil,* to trickle: Dan. *trille,* to roll]: to flow in drops or in a small intermittent stream; to run gently down. TRIC'KLING, imp. *-klĭng:* ADJ. flowing in a small gentle stream: N. the act of flowing in a small gentle stream. TRICKLED, pp. *trĭk'kld.*

TRICK-TRACK, n. *trĭk-trăk* [F. *trictrac,* backgammon]: a game at tables—resembling backgammon.

TRICLINIC, a. *trī-klĭn'ĭk* [Gr. *tris,* thrice; *klinō,* I bend]: having three unequal axes intersecting at oblique angles, applied to a system of crystallization; inclining or bending in three different directions; also called TRICLINOHED'RIC, a. *-klī-nō-hĕd'rĭk* [Gr. *hedra,* a seat].

TRICLINIUM, n. *trī-klĭn'ĭ-ŭm* [L.—from Gr. *tris,* thrice; *klinō,* I bend]: in *anc. Rome,* a couch to recline on at meals, usually for three persons; a dining-room furnished with couches on three sides. TRICLI'NIARY, a *-nĭ-ėr-ĭ,* pertaining to the ancient mode of reclining at table.

TRICOCCOUS, a. *trī-kŏk'kŭs* [*Gr. treis,* three; *kokkos,* a kernel or berry]: in *bot.,* having three one-seeded cells.

TRICOLOR, or **Tricolour**, n. *trī'kŭl-ėr* [L. *tres*, three, and Eng. *color:* F. *tricolore*, of three colors]: a national banner of three colors. **Trī'colored**, a. *-kŭl-ėrd*, having three colors.—*Tricolor* is simply a flag in three colors; and most national ensigns are of this kind; but the applied sense limits it to flags having three colors in equal masses. The principal T. ensigns are: France—blue, white, red, divided vertically, blue next the staff. German empire—black, white, red, divided horizontally. Italy—green, white, red, divided vertically. Belgium—black, yellow, red, divided vertically. Holland—red, white, blue, divided horizontally. The tricolor took its rise at the outbreak of the French Revolution as the badge of the National Guard. The red and blue were selected as the arms of Paris, and the white was added, as the color of the army, to show the intimate union which should subsist between the people and the armed force.

TRICORNIGEROUS, a. *trī'kŏr-nĭj'ėr-ŭs* [L. *tres*, three; *cornu*, a horn; *gero*, I bear]: having three horns.

TRICOSTATE, a. *trī-kŏs'tāt* [L. *tres*, three; *costa*, a rib]: in *bot.*, three-ribbed.

TRICOUPIS, *trē-kô'pĭs*, **Spiridion**: modern Greek statesman and author: 1791–1873; b. Missolonghi; son of a primate of that town. After completing his studies in France and England, he went to the Ionian Isles; but on the outbreak of the war of independence 1821, he hastened to enrol himself among the patriots. During the reign of King Otho, he was thrice sent to London as envoy-extraordinary; he was minister of foreign affairs and of public instruction (1843); vice-president of the senate (1844–49); and envoy-extraordinary to Paris (1850) on the occasion of the blockade of the ports of Greece by Great Britain.

T. had great reputation in his own country as orator and historian. His funeral oration on his friend Lord Byron, in the cathedral of Missolonghi, has been translated into most European languages. He published many other writings, political and religious; but his masterpiece is his History of the Greek Revolution (*Historia tes Hellēnikēs Epanastaseos*, Lond. 1853–4), praised for its accuracy, impartiality, and style.

TRICUSPID, a. *trī-kŭs'pĭd* [L. *tres*, three; *cuspis*, a point]: having three summits or points. **Tricus'pidate**, a. *-pĭ-dāt*, having three points; ending in three points.

TRICYCLE, *trī'sĭ-kl:* a 3-wheeled carriage: specifically, a Velocipede (q.v.) with three wheels, invented by James Starley, of Coventry, Eng., the 'father' of the Bicycle (q.v.). The rear wheels are of uniform size, and the front or pivotal wheel is generally much smaller. The T. is adapted particularly to ladies' use, though its use by men is increasing; and remarkable records have been made with it in Great Britain and in the United States. The best single T. record for 5 m. was made in London 1890, June 25, by G. Turner, 13 min. 50⅗ sec.; and the best tandem T. in London 1890, June 20, by Wilson and Dangerfield, 13 min. 54⅕ seconds.

TRIDACNIDÆ, *trī-dăk'nĭ-dē:* family of lamellibranchiate mollusks, having the shell open, the valves equal, the foot small, and furnished with a byssus. *Hippopus maculatus*, the BEAR'S PAW CLAM (q.v.), is prized for its beauty. *Tridacna gigas* is remarkable for great size, exceeding any other bivalve: the shell of a single specimen has been known to weigh more than 500 lbs., and to measure a yard or more in length. Some, 2 ft. or more, are often seen outside of restaurants in New York and other cities. The valves are sometimes used in Rom. Cath. churches for holy-water vessels. They are used also as an ornament for grottoes and fountains. They are deeply furrowed and beautifully grooved. This great mollusk is a native of the E. Indies, and is found in shallow water: it is used for food, and one suffices for a number of persons.

TRIDACTYLOUS, a. *trī-dăk'tĭ-lŭs* [Gr. *treis*, three; *daktŭlos*, a finger or toe]: having three fingers or toes.

TRIDENT, n. *trī'dĕnt* [F. *trident*, a trident—from L. *tridens* or *triden'tem*, having three teeth—from *tres*, three; *dens* or *dentem*, a tooth: It. *tridente*]: any instr. in the form of a fork with three prongs; a kind of sceptre or spear having three prongs; the sceptre of Neptune, the fabulous god of the sea; a figure frequent on ancient coins. TRI'DENTED, a. in *OE.*, having three teeth or prongs. TRIDENTATE, a. *trī-dĕn'tāt*, in *bot.*, having three teeth, or tooth-like divisions.

TRIDENTINE, a. *trī-dĕn'tĭn* [L. *Triden'tum*, Trent]: pertaining to the celebrated Council of Trent, or to Trent—e.g., the 'Tridentine Profession': see TRENT, COUNCIL OF.

TRIDIMENSIONAL, a. *trī-dĭ-mĕn'shŭn-ăl* [L. *tres*, three; and Eng. *dimension*]: having three dimensions; having length, breadth, and thickness.

TRIDING, n. *trī'dĭng* [see RIDING]: in *OE.*, the third part of a county or shire—now retained in Yorkshire in the corrupt form *Riding* (q.v.).

TRIDUO, n. *trĭd'ŭ-ō* [It.—from L. *triduum*]: in the *Rom. Cath. Chh.*, prayers through three days, followed by Benediction, as preparation for keeping a saint's day, or a means of obtaining some favor from God through intercession of one of his saints. TRIDUUM, n. *trĭd'ŭ-ŭm*, last three days of Lent; any three days kept in a special manner, as during a retreat, or as a preparation for a feast.

TRIDYMITE, n. *trĭ'dĭ-mīt* [Gr. *tridŭmos*, triple]: a mineral similar to quartz, occurring in triple plates.

TRIED, pp.: see under TRY.

TRIENNIAL, a. *trī-ĕn'nĭ-ăl* [L. *triennium*, the space of three years—from *tres*, three; *annus*, a year]: continuing three years, as *triennial* parliaments; happening every three years. TRIEN'NIALLY, ad. *-lĭ*. TRIENNIAL ACT, in *Eng. hist.*, an act of William and Mary, 1695, providing that no parliament should last longer than three years, repealed 1717.

TRIENS, n. *tri'ĕns* [L. the third part of an as, a third part]: in *law*, a third part; dower.

TRIER, n. *trī'ėr* [from TRY (which see)]: one who examines anything by a test or standard.

TRIESTE, *trē-ĕst'* (Ger. *Triest*, Slav. *Têrst*): city, the most important seaport of the Austro-Hungarian empire, and the most considerable trading-town on the Adriatic; stands at the head of the Gulf of T.; an arm of the Gulf of Venice; 90 m. s.w. of Laibach, on the Vienna and Trieste railway. It was an imperial free town; and attached and belonging to it is a territory of 46 sq. m., consisting of the slopes of the *Triestiner Karst*, which decline somewhat abruptly toward the Adriatic shore. The city of T., in which the pop. of the district is almost wholly massed, the other places being only small villages, consists of the old town, the new town, or Theresienstadt, and the two suburbs, Josefstadt and Franzenstadt. The old town, on the slope of a steep hill, surmounted by a castle (built 1680), forms about a fourth of the whole city, and is distinguished by its narrow streets and black walls. It contains the cathedral, an early Byzantine edifice of uncertain date, into whose walls stones bearing Roman inscriptions and carving have been built, and whose tower is said to rest on the foundation of a temple of Jupiter. The new town, with broad streets in regular parallelograms and with handsome houses, occupies the plain fronting the sea. Between these two divisions runs the *Corso*, chief thoroughfare of the city. The *Tergesteum*, in the new town, is a splendid modern edifice, containing a bazaar, a grand concert and ball room, exchange and reading rooms, and the offices of the Austrian Lloyd's, the largest establishment in Europe for sea-steamers. North, on the sea-shore, is the new and magnificent Lazaretto, with a harbor in which 60 vessels can perform quarantine at once. There are numerous churches for Greeks, Jews, Rom. Catholics, and Protestants. The pop. includes Germans, Americans, Italians, Greeks, Jews, Armenians, Dalmatians, etc.; but Italian is the prevailing language. T. was, till 1882, a free port; the harbor, with entrance uninterrupted by islands or sandbanks, is well protected. The manufactures are very extensive. There are more than 40 establishments for ship-building, and several soap-works and rope-works. Rosoglio, white-lead, and leather are manufactured, and wax-bleaching is carried on. The annual value of exports and imports is about $150,000,000. A great agricultural exhibition was held at T. 1882, and an addition to the harbor was opened 1883.—Pop. (1880) 133,019—dist. 144,844; (1890) city 158,344—dist. 157,466.

T., anc. *Tergeste* or *Tergestum*, was important under the Romans, and appears in history first B.C. 51, when it was overrun and plundered by neighboring tribes. It was much improved by Augustus, and 1382 passed finally into the hands of Austria. It owes its prosperity chiefly to Emperor Charles VI., who constituted it a free port, and to Maria Theresa. Since 1816 T. has borne the title 'The Most Loyal of Towns.' It ceased to be a free town 1891.

TRIFACIAL, a. *trī-fā'shal* [L. *tres*, three; *făciēs*, the face]: of or pertaining to the trigeminal or fifth cranial nerve, the great sensitive nerve of the head and face.

TRIFARIOUS, a. *trī-fā'rĭ-ŭs* [L. *trifarius*, of three sorts or ways]: in *bot.*, in three rows; looking in three directions.

TRIFID, a. *trī'fĭd* [L. *trifĭdus*, cleft into three parts—from *tres*, three; *fidi*, I have cleft; *findo*, I cleave]: in *bot.*, three-cleft; divided, as a leaf, into three segments which reach to the middle.

TRIFLE, n. *trī'fl* [OF. *trufle*, *truffle*, mockery, raillery—from *truffe*, a mock, a jest, a truffle (see TRUFFLE): It. *truffa*, a toy, an idle thing]: thing of little value or importance; small light cake or confection flavored, and soaked in wine or brandy, with syllabub poured over it: V. to act or talk lightly; to indulge in light or silly amusements; to spend or waste unprofitably; in *OE.*, to play with; to reduce to a trifle; make trivial. TRI'FLING, imp. *-fling:* ADJ. treating serious things with lightness; of small importance or value; nugatory: N. employment about things of no importance; the treating of serious things with lightness. TRIFLED, pp. *trī'fld.* TRI'FLER, n. *-flėr*, one who wastes time idling, or who acts with levity. TRI'FLINGLY, ad. *-fling-lĭ.* TRI'FLINGNESS, n. *-nĕs*, the state of being trifling. TO TRIFLE WITH, to befool; to delude; to treat as of no estimation.

TRIFOLIATE, a. *trī-fō'lĭ-āt*, or TRIFO'LIOLATE, a. *-lĭ-ō-lāt* [L. *tres*, three; *folĭum*, a leaf]: in *bot.*, having three leaves or leaflets from the same point. TRIFO'LIUM, n. *-lĭ-ŭm*, a genus of papilionaceous plants, commonly known as clovers or trefoils; common red clover is *Trifolĭum praten'sĕ*—the white Dutch clover, the shamrock of Ireland, is *T. repens*, ord. *Legumĭnōsæ* (see TREFOIL: CLOVER).

TRIFORIUM, n. *trī-fō'rĭ-ŭm* [L. *tres*, three; *foris*, a door]: in *arch.*, the open gallery or arcade in the wall above the arches of the nave of a cathedral or church. It is between the central and side aisles, and is usually a dark gallery, being the wall-space against which the lean-to roof of the aisles rests. In the later styles the side-aisles are covered with independent roofs, allowing the T. arches to be filled with glass.

TRIFORM, a. *trī'fawrm* [L. *tres*, three; *forma*, a shape]: having a triple form or shape.

TRIFURCATE, a. *trī-fėr'kāt*, or TRIFUR'CATED, a. *-kā-tĕd* [L. *tres*, three; *furca*, a fork]: having three branches or forks.

TRIG, a. *trĭg* [from *trick*, to dress, to decorate; W. *trec*, harness, gear]: true; tight; firm; trim; neat: V. to trick out. TRIG'GING, imp. TRIGGED, pp. *trigd.* TRIG'NESS, n. *-nĕs*, smartness; neatness.

TRIG, n. *trĭg* [Dut. *trekken*, to pull, the root of *trigger*]: a wedge to prop a cask, or to stop a wheel: V. to skid a wheel.

TRIGAMOUS, a. *trĭg'ă-mŭs* [Gr. *treis*, three; *gàmos*, marriage]: thrice married; pertaining to or characterized by trigamy: in *bot.*, having three sorts of flowers in the same flower-head, i.e., male, female, and hermaphrodite. **TRIG'AMY**, n. *-mĭ*, the state of having married three times; state of having three wives or three husbands living at the same time. **TRIG'AMIST**, n. *-mĭst*, one who has been thrice married; one who has three wives or three husbands living at the same time.

TRIGEMINAL, a. *trī-jĕm'ĭ-năl* [L. *tres*, three; *gemĭnus*, double]: in *anat.*, pertaining to the fifth pair of cranial nerves, which have three main branches.

TRIGGER, n. *trĭg'gėr*, in *OE.* **TRICKER**, n. *trĭk'kėr* [Dut. *trekker*, a trigger; *trekken*, to pull: Sw. *trycka*, to press]: the catch in a firearm which, when pulled, sets free the lock or clap for striking fire (see LOCK); a catch to hold the wheel of a carriage on a declivity; a wedge placed under the foot of the dog-shore, and withdrawn at the moment of launching a ship.

TRIG'LA: see GURNARD.

TRIGLYPH, n. *trī'glĭf* [Gr. *treis*, three; *gluphē*, a carving]: in *arch.*, an ornament consisting of a grooved tablet in the frieze of the Doric (q.v.) order, repeated at equal intervals; it is supposed to represent the ends of the beams in the original wooden temples. It is always divided into channels or flutes, with guttæ or drops below. **TRIGLYPHIC**, a. *trī-glĭf'ĭk*, or **TRIGLYPH'ICAL**, a. *-ĭ-kăl*, pertaining to triglyphs; containing three sets of sculptures.

TRIGON, n. *trī'gòn* or *trĭg'ŏn* [Gr. *treis*, three; *gōnĭa*, an angle]: a triangle: in *astrol.*, the junction of three signs of the zodiac. **TRIG'ONAL**, a. *-ŏ-năl*, or **TRIG'ONOUS**, a. *-nŭs*, triangular; having three angles or corners: in *bot.*, having three angles, the faces being convex. **TRIG'ONALLY**, ad. *-lĭ*.

TRIGONIA, *trī-gō'nĭ-a:* genus of mollusca, represented at the present day by only three species, natives of Australia, but remarkably abundant as fossils. More than 100 species have been described from strata between the Devonian and the Chalk inclusive, but not a single species is known from any Tertiary deposit. The shell is trigonal (whence the name), thick, and tuberculated, or ornamented with radiating or concentric ribs. The interior is nacreous. The external ligament is small and prominent, and the huge teeth are large, diverging, and transversely striated. The animal has a long, pointed, and powerful foot, with which it can make considerable leaps.

TRIGONOCARPUS, *trig-ŏ-nō-kâr'pŭs:* common fossil fruit in the Coal-measures, occurring in all the strata except the underclays and limestones. Six or eight species have been established, differing in size and shape—some as small as a pea, others as large as a walnut. They are marked, when preserved in the round, with three longitudinal ridges, and from this character the name was derived. They have never been found attached to any plant. Dr. Hooker, from examination of several specimens which exhibit structure, has shown that they are not unlike the structure of *Salisburia*, drupe-bearing coniferous tree, native of China and Japan, cultivated in Europe and America for its beauty, its singular leaves resembling those of a maiden-hair fern enlarged. The determination of the affinities of this fruit is important, as the existence of conifers in the Coal-measures was known from the occurrence in them of disk-bearing woody tissue; and the absence of linear leaves and cones makes it more probable that they belonged to the drupe-bearing division of the order. It is probable that the trunk, to which the generic name *Dadoxylon* has been given, and the cast of whose large pith is known as *Sternbergia*, had for its leaves the fern-like fossils named *Noggerathia flabellata*, and *Trigonocarpus* for its fruit. Dr. Dawson has, however, recently referred some *Trigonocarpa* to *Sigillaria*, and he considers the anomalous organism called *Antholites* to be the bud-form of the fruit. He has never found them in contact with *Sigillaria*, and it is much more probable that this was a cryptogamous tree, and consequently had spores, and not seeds, for its fruit.

TRIGONOCEPHALUS, *trig-ŏ-nō-sĕf'ă-lŭs:* genus of extremely venomous serpents, of family *Crotalidæ*, nearly allied to rattlesnakes, but having the tail terminated with a spine instead of a rattle. The head is covered with plates or shields; the dorsal scales are keeled. *T. rhodostoma* may be mentioned as an example. It is found in Java, and preys chiefly on frogs. *Cenchris*, *Craspedocephalus*, and other genera have recently been separated from T. The Moccasin Snake of the s. United States belongs to the genus *Agkistrodon*. One of the most dangerous serpents of the W. Indies is *Craspedocephalus lanceolatus*, called Fer-de-lance, which infests sugar-plantations and is a terror to man and beast.

TRIGONOMETRY, n. *trĭg′ŏn-ŏm′ĕ-trĭ* [Gr. *trigōnŏn*, a triangle; *metron*, a measure]: in *math.*, the application of number to express the properties of angles or of circular arcs, as well as to exhibit the mutual relations of the sides and angles of triangles to one another. **Trigonom′eter**, n. instrument for plotting angles and laying down distances on paper, and for solving problems in plane trigonometry by inspection. **Trig′onomet′rical**, a. *-ŏn-ō-mĕt′rĭ-kăl*, performed by or according to the rules of trigonometry. **Trig′onomet′rically**, ad. *-kăl-lĭ*. **Trigonometrical survey**, survey of a large extent of the earth's surface by means of a system of triangles, for the purpose of securing an accurate map or delineation of the country surveyed (see Surveying: Triangulation: Ordnance Survey).—*Trigonometry* is literally measurement of triangles; but this definition, though expressing the scope of T. in its early stages, is now wholly inapplicable; as T., like geometry, has far exceeded its primitive limits, and is properly defined as the 'consideration of alternating or periodic magnitude.' T., within the limits of its earlier definition, is geometrical; its advance beyond these limits is due to the introduction of purely algebraic methods. The quantities with which geometrical T. has to deal are certain lines definitely placed with respect to an angle, and consequently varying with it. These lines, generally denominated *trigonometrical functions* of the angle, are the sine, cosine, tangent, cotangent, secant, and cosecant; and are represented in the accompanying figure. The angle BAC is placed at the centre of a circle, called the circle of reference; its *sine*, CD, is the perpendicular let fall from the extremity of one radius upon the other; the *cosine*, DA, is that part of the radius between the foot of the sine and the centre; the *tangent*, BE, is drawn at right angles to one radius to meet the other produced; the *secant*, AE, is the radius produced to meet the extremity of the tangent; the *cotangent*, FG, is drawn from the extremity of a radius at right angles to one of the former, to meet the other produced; and the *cosecant*, AG, is the radius produced to meet the extremity of the cotangent. Other functions, as the *versed sine*, DB, which is the distance from B to the foot of the sine, and its counterpart, the *coversed sine*, FH, have

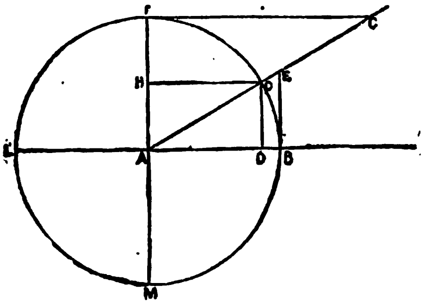


Fig. 1.

been occasionally introduced and defined, but are of no practical use. EAF, the angle which must be added to BAC to make up a right angle, is called the *complement* of BAC; and CAL, the defect of BAC from two right angles, is called its *supplement;* and, by inspection of the figure, it is evident that the sine of BAC, CD, is equal to AH, the cosine of its complement; that the cosine of BAC, AD, is equal to CH, the sine of its complement; and that generally any function of an angle is the co-function of its complement, and *vice versâ;* also, that CD, the sine of CAB, is also the sine of its supplement; AD, the cosine of CAB, is the cosine of its supplement; and that generally the function of an angle is the function of its supplement. If a right angle be added to BAC, then we have the triangles ADC, ABE, shifted so as to be in the same relative position to AF as they now are to AB, and each line is consequently at right angles to its former position; hence the sine of BAC is the cosine of (90° + BAC), and similarly of the others. By an extension of this process of investigation, we arrive at the general conclusions, that *if an angle be added to or taken from one or an odd number of right angles, the function of the original angle is the co-function of the one so derived;* and that *if an angle be added to or taken from an even number of right angles, the functions of the original angle are the functions of the derived one.* But since a function of an angle is the same function of its supplement, a knowledge of the function would not enable us to determine to which of the two angles it belonged unless we had some knowledge of more than the mere magnitude of the function. This desideratum is supplied in the following manner: B is taken as the zero-point of reckoning; the radius BA, which is thus supposed to be fixed, is one of the bounding lines of every angle, the other side being supposed to move in the direction BFL, as the angle increases. Let the radius AC be supposed to sweep round the circle in a left-hand direction (viz., toward F); then, as it approaches F, the sine CD increases, till, on reaching F, the sine coincides with the radius; passing F, and moving toward L, the sine diminishes, till, reaching L, it becomes zero. Continuing its progress round the circle, the angle BAC becomes *re-entrant* (viz., greater than two right angles); and its sine again increases, becoming equal to the radius at M, and diminishing in the fourth quadrant till it becomes zero at B. While the angle increased from B to L, the sine was drawn *downward;* for the other half of the revolution, it was drawn *upward;* hence, in the first and second quadrants the sine is said to be *positive*, and in the third and fourth *negative*, the position of a function in the first quadrant being adopted as the standard.

Angle.	Sine.	Cosine.	Tangent.
0° to 90°	inc. 0 – R, +	dec. R – 0, +	inc. 0 – ∞, +
90° to 180°	dec. R – 0, +	inc. 0 – R, –	dec. ∞ – 0, –
180° to 270°	inc. 0 – R, –	dec. R – 0 –	inc. 0 – ∞, +
270° to 360°	dec. R – 0, –	inc. 0 – R, +	dec. ∞ – 0, –

Angle.	Secant.	Cotangent.	Cosecant.
0° to 90°	inc. $R - \infty, +$	dec. $\infty - 0, +$	dec. $\infty - R, +$
90° to 180°	dec. $\infty - R, -$	inc. $0 - \infty, -$	inc. $R - \infty, +$
180° to 270°	inc. $R - \infty, -$	dec. $\infty - 0, +$	dec. $\infty - R, -$
270° to 360°	dec. $\infty - R, +$	inc. $0 - \infty, -$	inc. $R - \infty, -$

The above table shows the variation (increase or decrease, and between what limits, as well as the sign affecting it) of each of the functions as the angle increases.

We here observe that all the functions increase and decrease alternately as the angle of which they are the functions passes from one quadrant to another; also that the sine and cosecant are affected by the same signs, as also are the cosine and secant, and tangent and cotangent.

Again, from fig. 1 we obtain, from the properties of right-angled and of similar triangles, the following relations between the functions: $\text{Sin.}^2 + \text{Cos.}^2 = R^2$, $\text{Tan.}^2 + R^2 = \text{Sec.}^2$, $\text{Cot.}^2 + R^2 = \text{Cosec.}^2$, $\text{Tan.} : R :: \text{Sin.} : \text{Cos.}$, $\text{Sec.} : R :: R : \text{Cos.}$, $\text{Cot.} : R :: \text{Cos.} : \text{Sin.}$, $\text{Cosec.} : R :: R : \text{Sin.}$, and $\text{Cot.} : R :: R : \text{Tan.}$ From these eight relations, we easily obtain any one function in terms of any other, both as regards its magnitude and sign.

The reason why the circle and its radius are employed in the definition of the functions is, that we may obtain some invariable standard by which to estimate them; for while, as the angle increases from 0° to 360°, its functions are in a state of constant change, their standard of reference, the radius, remains the same. For greater simplification, the radius is taken as unity, and the relations become $\text{sin.}^2 + \text{cos.}^2 = 1$, $\text{tan.}^2 + 1 = \text{sec.}^2$, $\text{cot.}^2 + 1 = \text{cosec.}^2$, and (by the reduction from the proportional to the divisional form of the other five relations) $\text{tan.} = \frac{\text{sin.}}{\text{cos.}}$, $\text{sec.} = \frac{1}{\text{cos.}}$, $\text{cot.} = \frac{\text{cos.}}{\text{sin.}}$, $\text{cosec.} = \frac{1}{\text{sin.}}$, $\text{tan.} = \frac{1}{\text{cot.}}$; the various functions being expressed in terms of the assumed unit. Thus, in the right-angled triangle ABC (fig. 2), if AC be radius, $BC = \text{sin.}$, and $AB = \text{cos.}$, of the angle A; but if the radius be assumed as unity, $\text{sin. } A = \frac{BC}{AC}$, $\text{cos. } A = \frac{AB}{AC}$, and similarly, from the above relations, $\text{tan.} = \frac{BC}{AB}$, $\text{sec.} = \frac{AC}{AB}$, $\text{cot.} = \frac{AB}{BC}$, and $\text{cosec.} = \frac{AC}{BC}$; and in algebraic trigonometry these latter are the definitions of the trigonometrical functions.

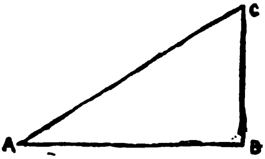


Fig. 2.

The only angular functions which geometry enables us to determine with accuracy are those belonging to the angles of an equilateral triangle (Euc. I. 1), an isosceles right-angled triangle (Euc. II. 9), and an isosceles triangle which has each of the angles at its base double of the third angle (i.e., base angles each 72°, vertical angle 36°) (Euc. IV. 10); and from these, by means of a proposition (demonstrated in all text-books on the subject) which determines the functions of the angle $(A + B)$—from knowledge of the functions of A and of those of B; and also, as a corollary to the preceding, the functions of 2A, 4A, 8A, etc., and inversely of ½A, ¼A, etc., from knowledge of those of the angle A—have been obtained and tabulated the functions of all angles from 1′ to 45°, the functions of angles from 45° to 360° being, as is evident from the above remarks respecting complementary and supplementary angles, merely repetitions of these.

The relations between the angles and sides of a triangle (fig. 3) are three in number, and are obtained from simple geometric considerations; they are: (1) $AB : AC :: \sin. C : \sin. B$; (2) $\cos. B = \dfrac{AB^2 + BC^2 - AC^2}{2\,AB\,.\,BC}$; (3) $AB + AC : AB - AC :: \tan. \tfrac{1}{2}(B + C) : \tan. \tfrac{1}{2}(B - C)$. From these relations, in conjunction with the fact that the three angles of a triangle collectively amount to 180°, it is possible, having given any three (one being always a side) of the six elements (three sides and three angles) of a triangle, to determine the other three. It is this that constitutes T. in its primitive and elementary form. If the triangles be right-angled, only the first relation, and the property of the sides of a right-angled triangle, are necessary for the complete solution.

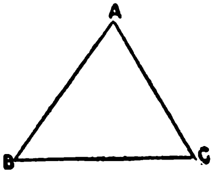


Fig. 3.

Algebraic T. is one of the most important branches of analysis, but is too extensive and varied to be even sketched here; suffice it to say, that in it the trigonometrical functions are considered not as geometrical magnitudes, but as numerical quantities having certain relations to each other, and that the circle as well as the angular functions are treated as multiples or sub-multiples of the radius. Many important results, such as the approximate estimation of the circumference of a circle, the completion of the solution of cubic equations, etc., have been obtained by its means; and a thorough knowledge of its modes and results is necessary to acquaintance with higher mathematics.

Spherical T. is plane T. applied to spherical triangles.

TRIGRAPH, n. *trĭ′grăf* [Gr. *treis*, three; *graphō*, I write]: a combination of three letters to express one sound; a triphthong.

TRIGYN, n. *trĭ′jĭn* [Gr. *treis*, three; *gunē*, a woman]: in *bot.*, a plant having three styles.

TRIHEDRON, n. *trī-hē′drŏn* [Gr. *treis*, three; *hedra*, a seat, a base]: a figure having three equal sides. **TRIHE′DRAL**, a. *-drăl*, having three equal sides.

TRIJUGATE, *trĭ'jŭ-găt*, or **TRI'JUGOUS**, a. *-gŭs* [L. *tres*, three; *jugum*, yoke]: in *bot.*, having three pairs of leaflets.

TRIKHALA, or **TRIKALA**, *trē'kâ-lâ:* town of the kingdom of Greece, 33 m. w.s.w. of Larissa; on the slope of a hill. It manufactures cotton and woolen stuffs and has large transit-trade. The neighboring plains, watered by the Salambria (anc. *Peneus*), are rich in all sorts of fruits. —T. is the *Trikka* of Homer, and was celebrated for its temple of Æsculapius. T. was ceded to Greece, with s. Thessaly, 1881.—Pop. (1881), 5,563.

TRILAMELLAR, a. *trī-lăm'ĕl-lėr* [L. *tres*, three; *lamella*, a small plate of metal]: in *bot.*, three-layered: applied to a compound stigma having three divisions flattened like bands.

TRILAMINAR, a. *trī-lăm'ĭ-nėr* [L. *tres*, three; *lamĭna*, a plate, a leaf]: consisting of threefold laminæ or layers of cells, as the blastoderm.

TRILATERAL, a. *trī-lăt'ėr-ăl* [L. *tres*, three; *latus*, a side, *latĕris*, of a side]: having three sides, as a triangle. **TRILAT'ERALLY**, ad. *-ăl-lĭ*.

TRILETTO, n. *trē-lĕt'ō* [It.]: in *mus.*, a short trill.

TRILINGUAL, a. *trī-lĭng'gwăl*, or **TRILIN'GUAR**, a. *-gwėr* [L. *tres*, three; *lingua*, a tongue]: consisting of or expressed in three languages.

TRILITERAL, a. *trī-lĭt'ėr-ăl* [L. *tres*, three; *lĭtĕra*, a letter]: consisting of three letters: N. a word consisting of three letters. **TRILIT'ERALISM**, n. *-ĭzm*, the system in the Semitic languages according to which the roots of the words have their three fundamental letters; the use of triliteral roots.

TRILITH, n. *trī'lĭth*, **TRILITHON**, n. *trī'lĭth-ŏn* [Gr. *treis*, three; *lithos*, a stone]: in *archæol.*, a monument, probably sepulchral, either standing alone or part of a larger work, and consisting of three stones, two uprights, connected by a continuous impost or architrave: the best known examples are at Stonehenge, England. **TRILITHIC**, a. *trī-lĭth'ĭk*, of or pertaining to a trilith; having the character of a trilith.

TRILL, v. *trĭl* [Sw. *trilla*, to roll: Dan. *trille*, to roll, to trundle: It. *trillare*, to quaver with the voice in singing: W. *treigl*, a rolling over]: to utter or play with a quavering or tremulous vibration; to sound in tremulous or quavering vibrations; in *OE*, to trickle; to roll: N. a shaking or quavering of the voice in singing; a quavering or tremulous sound. **TRIL'LING**, imp.: **ADJ.** quavering; tremulous. **TRILLED**, pp. *trĭld*.

TRILLIACEÆ, *trĭl-lĭ-ā'sē-ē:* small nat. order of plants, belonging to the class Dictyogens (q.v.) of Lindley; herbaceous, with tubers or root-stocks, whorled leaves, hermaphrodite flowers; perianth of six leaves, the three inner leaves sometimes colored; six, eight, or ten stamens, the filaments extending beyond the anthers in awl-shaped points; the ovary free, 3–5-celled, with numerous ovules; the fruit succulent. The order is characterized by narcotic properties. The genus *Paris* (q.v.) belongs to it.

TRILLIBUB, n. *trĭl'lĭ-bŭb:* in *OE.*, tripe; a trifle; anything worthless.

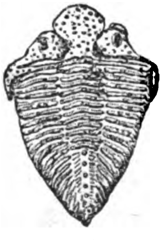
TRILLION, n. *trĭl'yŭn* [L. *tres*, three, and Eng. *million:* F. *trillion*]: in the *Eng. system of notation*, a number represented by the third power of a million; a million of millions of millions, represented by 1, followed by eighteen ciphers; in the *F.* and *It. systems*, now generally used in the United States, a million millions, or a thousand billions, represented by 1, followed by twelve ciphers.

TRILLIUM, *trĭl'lĭ-ŭm* [word coined by Linnæus from Lat. *tri-*, threefold]: genus of *Liliaceæ*, of which 14 Amer. species are known, and 2 Asian. The name has reference to the ternary arrangement running through the calyx, styles, and leaves. The species of T. are curious and interesting plants, having a thick, short, fleshy root-stock, and unbranched stem topped with a whorl of 3 broad, deep-green leaves, from which rises the beautiful sessile flower. The Purple T. is popularly called Indian Balm, Nosebleed, etc. In *T. erythrocarpum* (the Painted T.), deep-red lines mark the white petals. In *T. grandiflorum* of the e. states, and in *T. ovatum* of Cal., the white petals turn rose-color.

TRILOBATE, a. *trī-lō'bāt*, or TRILOBED, a. *trī'lōbd* [Gr. *treis*, three; *lŏbos*, a lobe]: having three lobes.

TRILOBITA, *trī-lō-bī'ta:* the trilobites, an order of fossil crustacea entirely confined to the paleozoic rocks. They are abundant specially in the Silurian period, and disappear in the lower members of the Coal-measures.

The body was covered with a chitinous shield, which consisted of a large united cephalic shield, a variable number of body segments, and a tail or pygidium, composed of a number of joints, more or less anchylosed. The eyes were sessile and compound. The lenses are frequently beautifully preserved, and in some species are so large that they can easily be seen with the naked eye. In *Asaphus caudatus*, each eye had at least 400 facets; and in the large *A. tyrannus* it is estimated that there are no fewer than 6,000. In some species a bifurcated plate has been found in the region of the mouth, which is believed to be a labrum; but no antennæ were detected until within a few years, when limbs were discovered by carefully made sections of the fossil. The members of the order varied greatly in size, some species being scarcely larger than a pin's head, while others, like *Asaphus gigas*, attained a length of 18 inches. It is probable that many named species may be only larval or transition forms of others. The minute *Agnosteus* is frequently found in such quantities as to indicate that it lived in shoals, as if it were the larval form of some large trilobite. Trilobites have a remarkable resemblance to an embryonic stage of the living King-crab; and the larval King-crab (Horseshoe Crab) no less resembles what is regarded


Asaphus tuberculatus.

as a larval trilobite, *Trinucleus*. They are now classed as orders of a crustacean sub-class, *Palæocarida*. More than 400 species have been described, and grouped into 50 genera.

TRILOBITE, n. *trī'lō-bīt* [Gr. *treis*, three; *lŏbos*, a lobe]: in *palæon.*, one of an extensive family of paleozoic crustaceans, the **Trilobitidæ**, n. plu. *trī'lō-bĭt'ĭ-dē*, deriving their name from the three-lobed aspect of their bodies (see **Trilobita**). **Trilobitic**, a. *trī'lō-bĭt'ĭk*, like or pertaining to a trilobite.

TRILOCULAR, a. *trī-lŏk'ū-lėr* [L. *tres*, three; *locŭlus*, a little place]: in *bot.*, having three cells or loculaments.

TRILOGY, n. *trĭl'ŏ-jĭ* [Gr. *treis*, three; *logos*, a discourse]: a series of three dramas, each complete in itself, the whole, however, forming but one poetical picture, as in Shakespeare's *Henry VI.;* in the *Athenian drama*, in which the term originated, *trilogy* was not only used in the above sense, but also applied to the exhibition of three tragedies on some special occasion, each tragedy being quite distinct in subject. A satyric drama was customarily added as a termination, whence the whole was sometimes termed a *tetralogy*. Every tragic poet that wished to take part in a poetic contest had to produce a T. with a satyric drama at the Dionysiac, Lenæan, and Anthesteriac festivals. We possess only one perfect specimen of the classic T.—the *Oresteia* of Æschylus, which embraces the *Agamemnon*, the *Chœphoræ*, and the *Eumenides*. Beaumarchais's three comedies from a comic trilogy of the kind first mentioned; Schiller's *Wallenstein* is a trilogy; and so are Swinburne's *Chastelard*, *Bothwell*, and *Mary Stuart*.

TRIM, a. *trĭm* [AS. *trum*, steadfast; *trymian*, to establish, to set in order]: compact; firm; nice; neat; tidy; dressed; in good order; having everything necessary: N. ornaments; trappings; proper state of dress; adjustment, arrangement, or condition as regards orderliness or balance; the state of a ship in regard to her cargo, ballast, masts, etc., by which she is well prepared for sailing: V. to put in due order for any purpose; to decorate; to dress; to clip, as the hair; to lop, as trees; to prepare, as a lamp; to dress timber; to make neat or tidy; to put a vessel in due order for sailing by adjusting the cargo, ballast, etc., that she may sit well in the water; to fluctuate between parties so as to appear to favor each in turn. **Trim'ming**, imp.: N. necessary or ornamental appendages, as lace, ribbons, and the like; the act of one who trims; inconstancy. **Trim'mings**, n. plu. the immediate surroundings of a dish at table, as bacon and *trimmings*. **Trimmed**, pp. *trĭmd*. **Trim'mer**, n. *-mėr*, one who trims; one who fits ornaments or arranges them; one who arranges the coal in a collier; one who adjusts his position to accord more or less with the different sides in a contest; a time-server (see below); a flat brick arch for supporting a hearth in an upper floor of a building; a piece of wood in a wall to support the ends of a joist or rafter. **Trim'ly**, ad. *-lĭ*, neatly; in good order. **Trim'ness**, n. *-nĕs*, neatness; snugness; state of being in good order. TRIM'MINGLY, ad. *-ming-li*, in a trimming manner. IN TRIM, in proper order. TO TRIM IN, in *carpentry*, to fit, as a piece of timber into other work. TO TRIM UP, to dress; to put in order.—SYN. of 'trim, v.': to dress; decorate; shave; clip; lop; prune; adjust; balance.

TRIMEROUS, a. *trĭ'mėr-ŭs* [Gr. *treis*, three; *meros*, a part]: in *bot.*, composed of three parts—a *trimerous* flower having its organs in three or multiples of three.

TRIMETER, n. *trĭm'ĕ-tėr* [Gr. *treis*, three; *metron*, a measure]: a poetical division of verse, consisting of three measures. TRIMETRIC, a. *trī-mĕt'rĭk*, or TRIMET'RICAL, a. *-rĭ-kăl*, consisting of three poetical measures; in *min.*, applied to crystals having the axes of three kinds.

TRIMETHYLAMINE, n. *trī'mĕ-thĭl'ă-mĭn* [Gr. *treis*, three, and Eng. *methyl*, which see]: in *chem.*, volatile alkaline substance having the smell of stock-fish, obtained from herring-brine, etc., as a colorless gas, readily soluble in water, and having strong alkaline reaction. With acids it readily forms soluble salts. It occurs in large quantity in the pickle in which herrings (especially their roes) have been lying, and in the spirit in which old anatomical preparations have been long suspended; and (strange as it may appear) it imparts to the leaves of *Chenopodium olidum* their atrocious odor, and to the flowers of *Cratægus oxyacantha* (the common hawthorn) their agreeable fragrance. It is obtained by distillation from ergot of rye, from guano, the juice of the leaves of red beet-root, and from putrid yeast, and has been detected in small quantity in human urine and in the blood of the calf. It may be formed artificially by action of iodide of methyl on dimethylamine.

TRIM'MER: a time-server; one who tries to keep in with both sides or parties. T. was a political term in use in the reigns of Charles II. and William III., originally applied to certain politicians of Charles's time, of whom the chief was Charles Montagu, Earl of Halifax, who held opinions half-way between the extreme whigs and tories. Halifax adopted the name T. as a title of honor, maintaining that everything good was a medium between extremes.—The same term was applied more generally by Dryden and other writers of the same period to all who, professing to be friends to monarchy, were at the same time enemies to the Duke of York, and who were equally obnoxious to the court and to the fanatical republicans.

TRIMMER, *trim'mėr*, SARAH (KIRBY): English author: 1741, Jan. 6—1810, Dec. 15; b. Ipswich. She had the advantage of acquaintance with Dr. Samuel Johnson, with whom she was a favorite. She was married 1762. Her publications, beginning 1780, included many school-books and other books for the young, on natural history, on scriptural study, etc.; and had much popularity. She also edited magazines for family instruction. Her *History of the Robins* is still read.

TRIMMING, TRIMNESS: see under TRIM.

TRIMORPHIC, a. *tri-mŏr'fĭk* [Gr. *treis*, three; *morphē*, form, shape]: in *bot.*, having three forms of flowers in one species. **TRIMOR'PHISM**, n. *-fĭzm*, the character and condition of a trimorphic plant.

TRIMÛRTI, *trē-mûr'tē* [from Skr. *tri*, three; *mûrti*, form]: the Hindu triad, *Brahma*, *Vishn'u*, and *S'iva*, viewed as an inseparable unity, though three in form. The *Padma-Purân'a* (see PURÂN'A), which, being a Purân'a of the Vaishn'ava sect, assigns to Vishn'u the highest rank in the T., defines its character in the following manner: 'In the beginning of creation, the great Vishn'u, desirous of creating the whole world, became threefold: creator, preserver, and destroyer. In order to create this world, the supreme spirit produced from the right side of his body himself as Brahma; then, in order to preserve the world, he produced from the left side of his body Vishn'u; and, in order to destroy the world, he produced from the middle of his body the eternal S'iva. Some worship Brahma, others Vishn'u, others S'iva; but Vishn'u, one, yet threefold, creates, preserves, and destroys; therefore, let the pious make no difference between the three.' And the *Matsya-Purân'a*, where speaking of *Mahat*, or the intellectual principle of the Sânkhya philosophy (see SÂNKHYA), says that 'Mahat becomes distinctly known as *three* gods, through the influence of the three qualities, goodness, passion, and sin; being one person and three gods—viz., Brahma, Vishn'u, and S'iva.' Apart, therefore, from sectarian belief, which makes its own god the highest, and gives him the attributes also of the other gods, *Trimûrti* implies the unity of the three principles of creation, preservation, and destruction, and as such belongs more to the philosophical than to the popular belief. When represented, the T. is one body with three heads: in the middle, that of Brahma; at its right, that of Vishn'u; and at its left, that of S'iva. The symbol of the T. is the mystical syllable *om*, where (*o* being equivalent to $a + u$) *a* means Brahma; *u*, Vishn'u; and *m*, S'iva. See OM.

TRINCOMALEE, *trĭng-ko-ma-lē'*: seaport town and magnificent harbor on the n.e. coast of Ceylon; 8° 34′ n., and 81° 12′ e.; on a bold peninsula, which divides the inner and outer harbors. It is a place of great antiquity, but its ancient renown was due more to religious than political or geographical considerations; for here the Malabar invaders of Ceylon built one of their most sacred shrines—the 'Temple of a Thousand Columns,' to which pilgrims flocked from all India. This celebrated shrine was demolished by the Portuguese, who fortified the heights with the materials from it, 1622. It was held next by the Dutch; but in 1672, during the rupture between Louis XIV. and the United Provinces, the French took T., which was abandoned by the Dutch in a panic. In 1782 the French admiral, in the absence of the Brit. commander, took possession of the fort, and the English garrison retired to Madras. It was restored to the Dutch the following year, and they retained it until the capture of Ceylon by the British 1795. The modern town, excluding the official buildings, is of poor appearance. There are Hindu temples in barbarous taste, and religious festivals and processions to which a similar epithet may be applied.—The Bay of T. is land-locked, and presents a scene of tranquil beauty; its fine expanse of water is still as an inland lake, and equally sheltered. It is the principal naval station in the Indian seas. 'On comparing this magnificent bay,' says Sir J. E. Tennent, 'with the open and unsheltered roadstead of Colombo and the dangerous and incommodious harbor of Galle, it excites an emotion of surprise and regret that any other than Trincomalee should have been selected as the seat of government and the commercial capital of Ceylon. As a harbor, T. is renowned for its extent and security; but its peculiar superiority over every other in the Indian seas consists in its perfect accessibility to every description of craft in every variation of weather.' The mean temperature for the year at T. is 81°·4.—Pop. (1881) 10,180; (1891) 11,411.

TRINCOMALEE′ WOOD: see HALMALILLE.

TRINE, a. *trīn* [L. *trīnus*, threefold—from *tres*, three]: threefold: N. in *astrol.*, the aspect of planets 120 degrees distant from each other. TRINAL, a. *trī′năl*, threefold.

TRINE-IMMERSION: in baptism in certain portions of the primitive church, the dipping a person three times beneath the surface of the water at the pronouncing of each of the three names of the Holy Trinity. When circumstances rendered baptism by affusion necessary, the affusion also was trine as it is at the present day.

TRINERVIS, a. *trī-nėr′vĭs*, or TRINER′VATE, a. *-vāt*, and TRINERVED, a. *trī′nėrvd* [L. *tres*, three; *nervus*, a nerve]: in *bot.*, having three ribs springing together from the base.

TRING, *trĭng:* town of Hertfordshire, England; 32 m. n.w. from London, near the right bank of the Ouzel, branch of the Ouse. It is neatly built, has manufactures of silk, canvas, and straw-plait, and is a station on the London and Northwestern railway.—Pop. (1881) 4,354.

TRIN′GA: see SANDPIPER.

TRINGLE, n. *trĭng′gl* [F. *tringle*, a curtain-rod]: a curtain-rod; in *arch.*, a name common to several little square members or ornaments, particularly one fixed over a triglyph.

TRINIDAD, *trĭn-ĭ-dăd′*, Sp. *trē-nē-thâth′:* island belonging to Great Britain, most southerly of the W. India islands, lat. 11° n.; about 50 m. long, breadth 30 to 35 m.; 1,755 sq. m. It is separated from the mainland (Venezuela) by the Gulf of Paria; and the extreme points on the w. coast are only 13 and 9 m. respectively from the continent. The Dragon's Mouth entrance, to the n., is the deepest channel to the harbor; and the s., or Serpent's Mouth, is shallow, owing to the deposits brought down by the Orinoco. The gulf itself is shoaling up from the same cause. The aspect of the island of T. is different from that of the Caribbean Islands generally: the mountains are not so lofty, and they extend e. and w. along the n. coast, clothed with stately forests, and their margins fringed with overhanging mangroves dipping into the sea. From the double-peaked mountain Tamana are seen the lovely and fertile valleys and plains with which the other part of the island abounds. The island has several good harbors and some rivers.

The chief town and cap., Port of Spain (pop. 34,000), is one of the finest towns in the W. Indies. It was originally of wood, but was burned down 1808, and has been rebuilt of the good stone procured in the neighborhood. The streets are long, wide, well paved, clean, and shaded with trees. There is another town, called San Fernando (pop. 7,000); and two or three pretty villages.

A remarkable phenomenon is a pitch lake near the village of La Brea, composed of bituminous matter floating on the surface of fresh water; about 3 m. in circumference and 80 ft. above sea-level: the pitch from this lake yielded a revenue 1890 of $120,255. The mineralogy of the island is little known. The soil is very productive. The climate is hot and moist; the thermometer ranges from 75° to 85°, even 90°; and the rain-fall is about 75 inches.—In 1890 the revenue was $2,277,196; expenditures $2,309,686; imports $10,929,621; exports $10,592,039. The trade with the United States was: imports $2,082,816, exports $3,523,500. Principal exports were: coffee 12,597 lbs.; asphalt, raw 68,201 tons, boiled 10,640—total 78,841 tons; cocoa-nuts 12,739,904; bitters and liquors 43,266 gals.; sugar 115,239,227 lbs.; molasses 2,024,884 gals.; rum 20,469 gals.; and cocoa 21,552,593 lbs. The entrances were 2,144 vessels of 141,355 tons; clearances 2,135 vessels of 142,998 tons. T. began shipping oranges, limes, and bananas to New York 1889.

T. is a crown colony, ruled by a gov., an executive council of 8, and a legislative council of 18 members. The first railway in T., from Port of Spain to Arima, was opened 1876.—Pop. (1871) 109,638; (1881) 155,128; (1890) 208,030, of whom 44,500 were natives of India, besides 24,500 born of E. Indian parents.

T. was discovered by Columbus 1496, July 31, and thus named by him because three mountain summits were first seen from the masthead when discovered; but no permanent establishment was founded there until 1532 by the Spaniards. In 1783 it fell into the hands of the British, who were confirmed in possession of it 1802.

TRINIDAD, *trĭn-ĭ-dăd′:* town, cap. of Las Animas co., Colo.; on the Purgatory river, and on the Atchison Topeka and Santa Fé, the Denver and Rio Grande, and the Denver Texas and Fort Worth railroads; 210 m. s. of Denver, 650 m. w.-by-s. of Kansas City, Mo. It is in a grazing and agricultural region, is surrounded by extensive beds of bituminous coal, and is an important wool and hide market. It contains 6 churches, Rice Institute, acad., graded schools, Rom. Cath. convent, several hotels, 2 national banks (cap. $200,000), 1 savings bank (cap. $25,000), and 4 daily and 4 weekly newspapers.—Pop. (1880) 2,296; (1890) 5,523.

TRINITY, n. *trĭn′ĭ-tĭ* [F. *Trinité*, the Trinity—from mid. L. *trinĭtas* or *trinĭtātem*, a triad, the Trinity—from L. *trinus*, threefold—from *tres*, three]: the eternal threefold distinctions—the Father and the Son and the Holy Spirit—in the One and only God (see below). **TRIN′ITA′RIAN**. a. *-tā′rĭ-ăn*, of or pertaining to the Trinity: pertaining to the doctrine of the Trinity: N. one who believes in the doctrine of the Trinity. **TRIN′ITA′RIANISM**, n. *-izm*, the doctrine that there are three distinct persons in the Godhead, yet but one God. **TRINITY SUNDAY**, the Sunday next after Whitsunday. **TRINITY HOUSE**, an institution, founded in 1518 and incorporated by Henry VIII., for the examination and licensing of pilots, erecting light-houses, etc. **TRINITY TERM**, in *Eng. law* (see LAW-TERMS).

TRIN′ITY, DOCTRINE OF THE: doctrinal statement of the eternal subsistence in the One living God of the three distinctions (known in common language, for lack of any adequate Eng. term, as 'Persons'), which distinctions are revealed in Holy Scripture as *the Father and the Son and the Holy Spirit—One God.* This doctrine—in which the limited human intellect not only deals with the inscrutable mystery of Infinite and Eternal Being, but also must express its thought in the inadequate terms of human language—has necessarily found an immense variety of theological statements, and has been the centre of endless controversy. While these various statements are allowable, and many of them, indeed, instructive, the final appeal from them all—and for practical purposes the only return—is to the revelation of the great *fact* in Holy Scripture, as indicated above. The most elaborate statement of the doctrine is in the Athanasian Creed, which asserts that 'the Catholic faith is this: That we worship One God as Trinity, and Trinity in Unity—neither confounding the persons nor dividing the substance—for there is one person of the Father, another of the Son, and another of the Holy Ghost. But the Godhead of the Father and of the Son and of the Holy Ghost is all one; the glory equal; the majesty coeternal.'

It is admitted that the doctrine is not found as a developed theological formula in the Scriptures; but it is claimed to be clearly revealed in its elements in the New Testament, and to be indicated in many statements and revelations of the Old Testament. Believers in this doctrine refer in the Old Testament to the apparent distinction, recognized in the revelations to the patriarchs and Moses, between Jehovah and 'the Angel of Jehovah;' the mode in which 'the Spirit' and 'Word' of God, and 'Wisdom' (Proverbs viii.), are spoken of; and the gradual unfolding of the doctrine of a 'Messiah.' In the New Testament Scriptures the doctrine (or, rather, fact) is found in the Trinitarian formula of baptism, Matt. x.v iii. 19; in the benediction by the apostle Paul, II Cor xxiii. 14; and, in numerous passages, in the general character of the claims and prerogatives of Jesus Christ, including the ascription to him of the designation 'the Son of God;' and in the functions attributed to the Holy Spirit. The evidence is held conclusive of the equal divine nature and yet personalized distinction of the Son and the Spirit with God the Father. It is generally conceded, however, that the Christians of the 2d, and even of the 3d c., did not bring the doctrine into clear philosophical statement: they were content for the most part to use scriptural expressions in speaking of the Father and the Son and the Spirit, without defining articulately the relation subsisting in the Trinity. It was not till the progress of opposing heresies sought, by philosophical arguments, on the one hand to lower the divine dignity of Christ (Ebionitism—see EBIONITE—in its various forms, and Arianism—see ARIUS); or, on the other hand, to confound the personality of Christ with God the Father—a heresy known in its special form as Patripassianism (see PATRIPASSIANS: MONARCHIANISM)—that the church was led to define in the Nicene Creed the relation of the Son to the Father; and further, in the Nicæno-Constantinopolitan Creed, the relation of the Spirit to the Father (see NICENE: CONSTANTINOPLE, COUNCILS OF: HOMOIOUSIAN). This creed was directed specially against the opinions of Arius. A further clause was afterward added, known as the *filioque* clause (see FILIOQUE), which determined the procession of the Spirit from the Son as well as from the Father; but this clause, and the doctrine which it embodies, was never accepted by the Eastern Church, to whose finer speculative genius is due the determination of the controversies which began in the 3d c. regarding the divine being. The Western or Latin Church had a less refined genius for such speculations; and, so far as it meddled with them, has imparted to them a coarser and more contradictory aspect, e.g., in the 'Athanasian Creed,' now well understood to be of Latin and not of Greek origin.

It is not our part here to criticise the evidence for the doctrine of the Trinity, or the validity of the doctrine itself; it is enough to say that the evidence, briefly sketched in the above outline, has been accepted as satisfactory, not only by the Rom. Catholic and oriental communions, but also by all the great Prot. communions. The notable exception in modern times to the reception of the doctrine is in the case of the Socinians or Unitarians (see SOCINUS, FAUSTUS: SOCINUS, LÆLIUS: UNITARIANS), who occupy in their teaching very much the position of the ancient Humanitarians (Ebionites). They reject the doctrine of the Trinity as incredible, and mostly regard Christ merely as a higher prophet (but see SWEDENBORG, EMANUEL). There have always, however, been various thinkers within the Christian Church, e.g., Dr. Samuel Clarke, beginning of the 18th c., who, accepting generally the doctrine of the Trinity, have rejected the special terms in which it is defined in the creeds.

On this, as on other doctrines of the Christian faith, it is the *fact* and not its *mode* which is revealed in the Scriptures: speculations as to its mode, and various philosophical inferences from it, may be of much or little value, but have no place as authoritative Christian doctrine. An instructive statement—first of the doctrine in its substance, then of some theoretical statements of it—is in these words of Prof. Edwards A. Park (*Bibliotheca Sacra*, 1881, Apr.): 'A theologian may adopt the following definition of the Trinity: The Father is God; the Son is God; the Holy Spirit is God; the three are distinct from each other by a necessity of their very substance; neither is God without the others; and there is only one God. Here is the doctrine, stated without using technical terms.—A theory of the doctrine is, that God is only one person in the psychological sense of that word, but exists in three distinct modes—ontological and necessary modes of subsistence, and not modes of mere action or manifestation. The first of these modes is the ground on which it is distinctively proper for Him to perform one class of official acts; the second is the ground on which it is distinctively proper for Him to perform another class of official acts; the third is the ground on which it is distinctively proper for Him to perform a still different class. As each mode is distinct from the other two, each is called a *distinction*. As each is the ontological basis of a distinct property, each is called a *subsistence*, an *hypostasis*. As each is the ontological basis on which personal acts ultimately depend, each is called a *person* in a technical, not in the philosophical, sense of the word. As each of these modes is relative to the other two, each is called an *internal relation*. God is said to exist in the three modes, distinctions, persons, relations; and the three are said to exist in Him; and the three are said to *be*, as well as to be *in*, the one God. On this theory the different *ὑπόστασεις* have only one consciousness, one will, one set of attributes; the unity being plain, the triality being mysterious. A different theory is that the three divine persons have each a distinct consciousness, a distinct will, a distinct set of attributes; the unity being mysterious, and the triality plain. A modification of this theory is that the Godhead consists of three minds, each one of which has a consciousness of the other two, and is thus one with them. A not uncommon theory is that the infinite mind differentiates itself from itself, and then unites itself with itself; the subject projecting itself into an object of consciousness is the first Hypostasis; the object being known by the subject is the second Hypostasis; the knowledge identifying the object with the subject, or the love uniting the two, is the third Hypostasis. This general proposition, in diversified forms, lies at the basis of theories which do not exhibit it on the surface. In the earlier period of his life, Melanchthon said: "These mysteries (the doctrines of God, the Trinity, the person of Christ) are better reverenced than inquired into." At a later period he defined the Trinity as "the eternal necessary process of the divine self-consciousness, in which God, whose thoughts are realities, eternally sets Himself over against Himself, but also again unites with Himself."'

See (besides references above noted) **Person**: **Christ, The**: **Christology**: **Logos**: **Son of God, The**: **Holy Spirit**: **God**; also references under these titles.

TRIN'ITY River: in Cal., rising near the Coast Range, and flowing first n.w., then s.w., through a country of rich gold mines, into the Klamath river, in Humboldt co.: length estimated 130 miles.

TRIN'ITY River: in Texas, formed by the union of two streams, West Fork and Elm Fork, which rise near the n. boundary of the state, and unite 150 m. s.e.; the main stream flowing thence 550 m. in the same general direction to Galveston Bay, about 40 m. n. of Galveston. It is navigable 300 to 500 miles.

TRIN'ITY CHURCH, in New York: see NEW YORK (City).

TRIN'ITY COLLEGE: educational institution in Hartford, Conn., controlled by the Prot. Episc. Chh. It was founded 1824 under the title Washington College; changed to T. C. 1845. The college site was sold to the state of Conn. 1872, and the institution removed to a fine location within the limits of Hartford. On the new grounds (78 acres) the college building is a great quadrangle measuring 1,050 by 376 ft., in the Early English style, 'superior to the buildings found elsewhere in the country' (Pres. George Williamson Smith, of T. C., 1891). The number of vols. in the library (1897) was 38,000: the library was reported to have been 'considerably enlarged' 1891. There are many scholarships, and their number is increasing. The first pres. of T. C. was the Right Rev. Thomas C. Brownell, D.D. The total property of the college is valued at about $1,500,000. Number of students (1897) 127.

TRIN'ITY COLLEGE, Cambridge: one of the colleges of Cambridge Univ., England; founded by Henry VIII., 1546, on the site, and partly out of the revenues, of several more ancient foundations, of which two deserve notice. King's Hall (*Aula Regis*) was named from its founder (1337), Edward III., whose father, Edward II., had maintained 32 scholars, called king's scholars, but had died before completing his intentions. The master's stipend was fourpence per day, and that of each scholar twopence, with two robes at Christmas. The revenues of King's Hall at the time of its surrender to Henry VIII. amounted to £214 per annum. Michael House was founded 1324, by Hervey de Stanton, chancellor of the exchequer to Edward II.: he dedicated his college to the Trinity, the Virgin Mary, St. Michael the Archangel, and All Saints.—When Henry VIII. united these smaller foundations into the one great college, thenceforth called TRINITY COLLEGE, besides other endowments he added the estates of 27 dissolved monasteries, making the gross revenues about £1,700 per annum. Queen Mary added very largely to these benefactions, and provided for 20 additional scholars, 13 poor scholars or sizars, 4 chaplains, and a choir. Queen Elizabeth gave the college a new set of statutes, by which it was governed until the reign of Queen Victoria, when these statutes were revised. Subsequently, under the Cambridge Univ. Commission (1859–60), new statutes were again given, making important changes. Such fellows as fill the office of bursar, tutor, or lecturer in the college, or prof. in the university, are exempt from the necessity of taking holy orders, which must otherwise be done by all fellows within seven years after taking the degree M.A. Marriage is permitted to fellows in a few exceptional cases, and to the chaplains and librarian. The master of T. C. must be in holy orders, and the appointment is in the gift of the crown. The following are some of the more eminent names in the list of masters: John Whitgift, who was raised to the see of Worcester; Thomas Nevile, Dean of Canterbury (d. 1615), who built the greater part of the cloistered court known by his name. To Dr. Barrow, who was made master 1672, the college owes the finishing of Nevile's Court, and the erection of the Library, from designs by Sir Christopher Wren. The famous Dr. Bentley was master 1700–42. William Whewell (q.v.) was one of the most distinguished men that this college has produced: he was also its munificent benefactor, and he bequeathed to it his large fortune. A few of the many other names of distinction are: Lord Bacon (died 1626); Sir Edward Coke (1634); Cowley the poet (1667); Lord William Russell (beheaded 1683); John Dryden (1701); Samuel Pepys (1703); Sir Isaac Newton (1727); Richard Porson (1808); Lord Macaulay (1859); also Prof. H. A. J. Munro, ed. of *Lucretius*, and Lord Tennyson, poet-laureate. The foundation now consists of a master, 60 fellows, and 74 scholars.

The buildings, except the Hall and the Library, are not of any architectural pretensions. The statue of Newton by Roubiliac, in the antechapel, is one of the finest modern statues.—See Cooper's *Annals and Memorials of Cambridge;* Dyer's *History;* and the *University Calendar.*

TRIN'ITY COLLEGE, Dublin: see DUBLIN, UNIVERSITY OF.

TRIN'ITY COLLEGE, Oxford: one of the colleges of Oxford Univ., England. In 1290 Richard de Hoton, Prior of Durham, founded Durham College at Oxford, for the education of the student-monks of Durham. At the dissolution of the monasteries, the property of this institution was transferred by Henry VIII. to the newly erected chapter of Durham Cathedral. Its site and buildings, however, passed into the hands of Sir Thomas Pope, who, 1554, founded a college on the spot, to be called T. C., for the maintenance of 20 scholars, of whom 12 were to be fellows, and 8 scholars properly so called. In 1557 he added four scholarships; also another was added, besides two exhibitions. The fellowships and scholarships are now thrown open without restrictions; the latter are tenable for 20 terms, value £80 a year, besides rooms. This is the first college, after Balliol, founded by a layman; it is remarkable also as having been, like St. John's, founded by a Rom. Cath. after the Reformation. It presents to 11 benefices.

TRIN'ITY HALL, Cambridge: one of the colleges of Cambridge Univ., England (distinct from Trinity College): founded 1349–50 for scholars of canon and civil law, as well as for the education of clergy, by William Bateman, Bp. of Norwich, co-founder also of Gonville and Caius College. A great pestilence had recently swept away most of the clergy of his diocese, so that (according to a bull of Pope Clement VI., Avignon, 1349) there were not less than 1,000 parishes in the diocese void of incumbents. The first master was Robert de Stratton. There are 13 fellowships, of which 10 may be held by laymen for 10 years, and are not vacated by marriage. There are also 5 law-studentships, 16 scholarships, and 2 exhibitions.—See Cooper's *Memorials and Annals*, and Dyer's *History of Cambridge;* also the *University Calendar.*

TRIN'ITY HOUSE (properly, The Corporation of the Elder Brethren of the Holy and Undivided Trinity): corporation intrusted with the regulation and management of the light-houses and buoys of the shores and rivers of England, under the general superintendence of the Board of Trade (q.v.). It was a mariner's assoc., founded at Deptford 1514, confirmed in its privileges 1680. Its first light-house was erected 1680, all light-houses on the English coast up to that time having been built by private individuals. T. H. is composed of honorary and active members—the 11 honorary 'elder brothers' chosen on the ground of eminent social position; the 19 active 'elder brothers' and an unlimited number of 'younger brethren' chosen on the ground of special qualifications for the duties. The duties are discharged by means of special committees and sub-committees.

TRIN'ITY SUNDAY: the Lord's Day immediately following the Pentecost Day or Whitsunday; so called as being set aside for the special honor of the Holy Trinity. The date of its origin has occasioned much controversy. No such festival as T. S. was known to the fathers of the early centuries: in the older liturgies T. S. was regarded as merely the octave of Pentecost. Evidence of its non-acceptance by the general church before the 9th or 10th c. is the absence even to this day of any corresponding festival in the calendar of the Greek Church; and though it seems quite certain that it was introduced in certain particular churches of the West at earlier and varying dates, its general establishment for the whole Western Church dates from a decree of Pope John XXII. (d. 1334). Nevertheless, the mass and office peculiar to the day are traceable, at least in part, in several sacramentaries and other liturgical books of the earlier centuries.—See Benedict XIV., *De Festis*, i. 2, 10; Binterim, *Denkwürdigkeiten Christ-katholisch. Kirche*, V., part 1.

TRINKET, n. *trĭng'kĕt* [imitative of the rattling which pleases children with their toys: Port. *trinco*, snapping of the fingers: F. *traquet*, a rattle: Wal. *trankot'*, a rattle, a trifle]: anything small and of no great value; any small ornament for the person made of gold, silver, pebble, or the like; a toy: V. to communicate with; to intrigue; to have mercenary dealing with. **Trin'keter**, n. *-ėr*, one who intrigues.

TRINKET, or **Trinquet**, n. *trĭng'kĕt* [F. *trinquet*, the topgallant: Sp. *trinca*, a rope for making fast]: the highest sail of a ship; a topgallantsail.

TRINODA NECESSITAS, *trī-nŏ'da nĕ-sĕs'sĭ-tas:* three species of contributions to which, in Anglo-Saxon times, all the lands of England, whatever their tenure, not excepting those of the church, were subject—viz.: *Bryge-bot*, for keeping the bridges and highways in repair; *Burg-bot*, for keeping the fortresses in repair; and *Fyrd*, for maintaining the military and naval force of the kingdom.

TRINOMIAL, a. *trī-nō'mĭ-ăl* [L. *tres*, three; *nomen*, a name]: consisting of three terms, as the technical name of a sub-species in *zool.* or *bot.*, or as an algebraic quantity: N. an algebraic quantity consisting of three terms; a trinomial expression; a name consisting of three terms.

TRIO, n. *trī'ō* or *trē'ō* [It. *trio*, three united—from L. *tres*, three]: three united; three persons in company or acting together; a musical composition requiring three performers; also, a movement in ¾-time, following a minuet or other movement, and in a different key, but always leading back to the previous movement in the original key.

TRIŒCIOUS, a. *trī-ē'shŭs* [Gr. *treis*, three; *oikos*, a house]: in *bot.*, producing male, female, and hermaphrodite flowers, each on separate plants. **Triœciously-hermaphrodite**, another name for *trimorphic*.

TRIOLET, n. *trī'ō-lĕt* [see **Trio**]: in *verse*, a stanza of eight lines, of which the seventh and eighth are the same as the first and second, and the fourth is the same as the first.

TRIONAL: a hypnotic, used to produce sleep in cases when there is no pain; obtained in colorless, odorless crystals, by passing dry hydrochloric acid into a mixture of anhydrous mercaptan and methyl-ethyl ketone, and oxidizing the product; formula, $C_8H_{18}S_2O_4 = CH_3(C_2H_5)C(SO_2.C_2H_5)_2$. It is soluble in alcohol, ether, and water, and melts at 76° C.

TRIONES, n. plu. *trī-ō'nēz* [L. *triōnēs*, plowing-oxen]: in *astron.*, the seven principal stars in the constellation Ursa Major, popularly called Charles's Wain or the 'Dipper.'

TRIOR, n., or **Trier**, n. *trī'ėr* [from **Try**, which see]: a person appointed to ascertain whether a challenge to a panel of jurors, or to a single juror, is just.

TRIOXIDE, n. *trī-ŏks'īd* [Gr. *treis*, three, and Eng. *oxide*]: metallic anhydride having a strong acid character; see **Monoxide**.

TRIP, v. *trĭp* [Ger. *trapp-trapp-trapp* represents the sound of the footfall: Dut. *trippen*, to tread: Dan. *trip*, a short step: Low Ger. *trippeln;* Sw. *trippa*, to stumble, to slip: OF. *triper*, to tread (see TRAMP)]: to run or step lightly or nimbly; to take short quick steps; to strike the foot against something so as to fall or stumble; to cause to fall by striking the feet suddenly from under the person, with *up*, as 'to trip up;' to overthrow or supplant; to fail; to err: N. a stepping lightly or nimbly; a stumble or fall by striking the foot against an object; a false step; a stroke or catch in wrestling; a failure; a mistake; a slight error; a journey or excursion; a short voyage or tour. TRIP'PING, imp.: ADJ. quick; nimble: N. the act of tripping; a light dance. TRIPPED, pp. *trĭpt*. TRIP'PER, n. *-pėr*, one who trips. TRIP'PINGLY, ad. *-lĭ*, in a light, graceful, or nimble manner. TO TRIP THE ANCHOR, to free the anchor from the bottom. TO CATCH TRIPPING, to detect any one committing an error or mistake.

TRIPARTED, a. *trī-pârt'ĕd:* in *bot.*, parted into three segments.

TRIPARTITE, a. *trī-pâr'tīt* [L. *tres*, three; *partītus*, pp. of *partior*, I divide]: divided into three; having three corresponding parts or copies; made by three parties, as a treaty: in *bot.*, deeply divided into three segments. TRIPAR'TITELY, ad. *-lĭ*. TRIPARTITION, n. *trī'pâr-tĭsh'ŭn*, a division by three.

TRIPE, n. *trīp* [It. *trippa;* Sp. and Port. *tripa;* F. *tripe;* W. *tripa*, belly, guts]: originally, the entrails; the large stomach of ruminants cleaned and prepared for food. TRIPE'MAN, n. one who sells tripe. TRIPESTONE, a name given to *anhydrite* when composed of contorted plates, which bear a sort of resemblance to the convolutions of the intestines. TRIPE-VISAGED, a. having a face flabby like tripe.

TRIPEDAL, a. *trī-pē'dăl* [L. *tres*, three; *pes* or *pĕdem*, a foot]: having three feet.

TRIPE DE ROCHE, *trēp dĕh rŏsh:* certain lichens, species of *Gyrophora*, which Canadian hunters are often forced to use as food. They are nutritious, but bitter, nauseous, and purgative. They have a leafy peltate thallus, variously lobed and notched—in *G. proboscidea* of smoky-brown color, and in *G. erosa* almost black; the shields are round, without stalks, covered with black membrane, and marked with circles and plaits on the surface. These lichens grow on rocks in northern regions, or on high mountains. They are abundant in Spitzbergen, and a species, well known as a native of the Scottish mountains, is found in the Himalaya above 18,000 feet.

TRIPENNATE, a. *trī-pĕn'nāt*, or TRIPIN'NATE, a. *-pĭn'nāt* [L. *tres*, three; *penna* or *pinna*, a feather]: in *bot.*, applied to a compound leaf three times divided in a pinnate manner.

TRIPETALOUS, a. *trī-pĕt'ă-lŭs* [Gr. *treis*, three; *petălon*, a leaf]: in *bot.*, having three petals or flower-leaves.

TRIPHTHONG, n. *trĭf'thŏng* or *trĭp'-* [Gr. *treis*, three, *phthonggē*, sound]: a combination of three vowels in one sound, as *eye;* a trigraph. **TRIPHTHON'GAL**, a. *-thŏng'găl*, pertaining to or consisting of a triphthong.

TRIPHYLLOUS, a. *trī-fĭl'lŭs* [Gr. *treis*, three; *phullon*, a leaf]: in *bot.*, having leaves in whorls of three, or producing only three leaves

TRIPINNATE: see **TRIPENNATE**.

TRIPINNATIFID, a. *trī'pĭn-năt'ĭ-fĭd* [L. *tres*, three; *pinna*, a feather; *findĕrĕ*, to divide]: in *bot.*, pinnatifid with the segments twice divided in a pinnatifid manner.

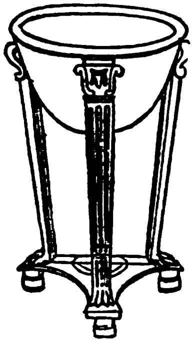
TRIPIT'AKA: see **PIT'AKA**.

TRIPLE, a. *trĭp'l* [F. *triple*—from L. *triplex*, threefold—from *tres*, three; *plico*, I fold]: consisting of three united; threefold; three times repeated; in *OE.*, third: V. to make thrice as much or as many, usually written *treble*. **TRIP'LING**, imp. *-lĭng*. **TRIPLED**, pp. *trĭp'ld*. **TRIP'LY**, ad. *-lĭ*, in a triple or threefold manner. **TRIPLE-CROWNED**, a. having three crowns; having the triple crown or tiara, as the pope. **TRIPLE TIME**, in *music*, a certain time, so called from each bar possessing a rhythm of three beats. **TRIP'LET**, n. *-lĕt*, three of a kind; three united; three lines of verse that rhyme together; three notes sung or played in the time of two, as when a minim is divided into three crotchets: one of three children at a birth. **TRIP'LICATE**, a. *-lĭ-kāt*, composed or consisting of three; threefold: N. a third paper or thing corresponding to two others of the same kind; a set of three, as foreign bills of exchange are usually drawn in *triplicate*. **TRIP'LICA'TION**, n. *-kā'shŭn*, the act of making threefold or adding three together. **TRIPLICITY**, n. *trī-plĭs'ĭ-tĭ*, or **TRIPLENESS**, n. *trĭp'l-nĕs*, state of being threefold. **TRIPLITE**, n. *trĭp'līt*, a mineral phosphate of manganese occurring in massive or coarsely granular aggregates, so called from its being cleavable in three directions at right angles to each other **TRIPLE ALLIANCE**, name of three different alliances: (1) A treaty concluded 1668 at the Hague between England, Holland, and Sweden, having for its object the protection of the Spanish Netherlands and the checking of the conquests of Louis XIV.—(2) An alliance 1717 between Britain. France, and Holland, against Spain, which included among its stipulations that the Pretender should quit France, and that the treaty of Utrecht should be carried into effect regarding the demolition of Dunkirk. The Prot. succession was guaranteed by this treaty in England, and that of the Duke of Orleans in France.—(3) An alliance (known as the *Dreibund*) formed about 1883 between Germany, Austria-Hungary, and Italy, as a check to Russia and France.

TRIPLICOSTATE, a. *trĭp'lĭ-kŏs'tāt* [L. *triplus*, threefold; *costa*, a rib]: in *bot*, having three ribs proceeding from above the base of the leaf.

TRIPLOBLASTIC, a. *trĭp'lō-blăs'tĭk* [Gr. *triplŏos*, threefold; *blastos*, a germ]: in *zool.*, having embryos in which the blastoderm separates into three layers.

TRIPOD, n. *trī'pŏd* [Gr. *tripous*, three-footed, also a tripod—from *treis*, three; *pous* or *poda*, a foot]: a three-legged stool or table; a portable three-legged frame or stand, jointed at the top, used to support a camera, surveying-instrument, or the like, when in use; in classical times, a three-legged caldron; a bronze altar supported on three legs, with three rings at the top to serve as handles. Of this description seems to have been the T. at Delphi, from which the Pythian priestess delivered her oracles, with the addition, however, of a round flat plate on the top, on which the priestess sat while giving the response, while a laurel wreath lay on it at other times. Tripods of similar form were given as prizes at the Pythian games; and at Athens a T. was considered an appropriate reward for a successful choragus. Some beautiful tripods were found at Pompeii; and there are interesting specimens in the Brit. Museum. Analogous to the classic T. is Thor's *kettle* in Scandinavian mythology, probably the original of the witches' caldron.



Tripod.

TRIPOLI, *trĭp'ō-lĭ:* former regency, now a vilayet, of the Ottoman empire, and the most easterly of the Barbary States, n. Africa; bounded w. by Tunis, s. by the Libyan Desert and Fezzan, e.—if we include the plateau of Barca (q.v.)—by Egypt, and n. by the Mediterranean; estimated 399.000 sq. m.; pop. uncertain, but prob. between 800,000 and a million. T. is less mountainous than the rest of Barbary, the Atlas range terminating here in two chains parallel to the coast, never higher than 4,000 ft. There are no rivers, and rain seldom falls during the long hot summers; but the dew is copious, and supports vegetation in favored spots. The coast region (about 1,100 m. long) is very fertile about Tripoli and Mesurata, where all sorts of tropical fruits, grain, wine, cotton, madder, etc., are produced; but further e., along the shores of the Gulf of Sidra, sandy desolation reigns. The interior yields senna, galls, and the finest dates; the carob and lotus are indigenous. Sheep and cattle are reared in great numbers, and T. is noted for its small but excellent horses, and its strong and handsome mules. The commerce consists in exporting, principally to Malta and the Levant, the products of the country and of interior Africa (gold-dust, ivory, natron), brought in caravans across the desert. The imports (chiefly European manufactures) have been declining gradually of late years, from two causes. The *first* is the new direction which the trade of central Africa is assuming: by the Niger and its great tributary, the Benue, European manufactures are more rapidly and economically conveyed to the northern intertropical regions than by the tedious overland route of the Great Sahara. The *second* cause is the abolition of the slave-trade, which has stopped the demand for the commodities that supported the traffic.

T. is subdivided into four *livas* or provinces—Tripoli, Benghazi, Mesurata, and Gadames. The gov.gen. has the title, rank, and authority of a pasha of the Ottoman empire: he is appointed by the sultan, and in his turn appoints the *beys* or subordinate governors of the provinces. The military force consists of a body of Turkish soldiers, formerly about 3,000, but increased 1885 to 17,000 in number, whose business is to keep down insurrections, but who were formerly wont to vary it by creating them. The natives (Libyan Berbers, Moors, and a few Arabs) pay to the imperial govt., as tribute, a tenth of all products of the soil; and there is a special tax on every olive-tree and date-tree, on every camel, on all horned cattle, on sheep and goats, and on Jewish residents. Little wisdom and less justice are shown in either the imposition or collection of the taxes.

In ancient times T. (when we first read of it) appears to have formed the most w. portion of the territory of Cyrenaica (Barca), or at least to have been tributary to the Cyrenæans, from whom it was wrested by the Carthaginians. It passed next to the Romans, who included it within the province of Africa, and gave it the name *Regio Syrtica*. About the beginning of the 3d c. it became known as *Regio Tripolitana* (on account of its three principal cities, Œa, Sabrata, and Leptis, which were leagued together—whence its present name T.), and was raised to the rank of a separate province probably by Septimius Severus, a native of Leptis. Like the rest of n. Africa, it was conquered by the Arabs (see BARBARY), and the feeble Christianity of the natives was supplanted by a vigorous and fanatical Mohammedanism. In 1552 the Turks got possession of it, and have since been its rulers, though the authority of the sultan, till 1835, had been virtually at zero for more than a century. In that year an expedition was dispatched from Constantinople; the ruling dey, Karamauli (in whose family the sovereignty had continued since 1714), was overthrown and imprisoned; a new Turkish pasha, with vice-regal powers, was appointed, and the state made an eyalet of the Ottoman empire. Several rebellions (notably 1842 and 44) have been suppressed.

TRIP'OLI, called by the Turks *Tarabûlûs*, and probably the *Œa* of antiquity: city, cap. of the Turkish n. African vilayet of T.; on a rocky promontory in the Mediterranean, which forms a small bay. It is surrounded by high walls with bastions, and is irregularly built, but has beautiful gardens. There are 12 mosques, 3 synagogues, and 2 Christian churches. The city still has a typical Moorish aspect. Though the majority are Moslems, nearly all the trade is in the hands of Jews and Christians. The overland trade to Sudan has greatly fallen off, but there is considerable trade with Malta.—Pop. (1885) 30,000.

TRIP'OLI (mod. Ar. *Tarâbulus*, anc. *Tripolis*): seaport, one of the chief commercial towns of Syria, cap. of a pashalic in the eyalet or govt. of Sidon; near the Mediterranean coast, on the e. border of a small triangular plain extending into the sea, and on both sides of the river Kadisha; 50 m. n.n.e. of Beyrout. The town is substantially built of stone, with many remains of mediæval architecture, and is supplied with excellent water by an aqueduct. It is surrounded by gardens of orange, lemon, mulberry, apricot, and other fruit trees, which are planted also in the town itself, and give the place a rich and picturesque appearance; but the low marshy neighborhood renders it unhealthful. On the left side of the river stands the castle built by Count Raymond of Toulouse, 12th c., when the city was taken by the Crusaders. At the n.w. apex of the small plain, 1¼ m. from T., is its port, El-Mina (the Landing-place), or the Marina, a small fishing-village. The harbor, like other harbors on the Syrian coast, scarcely deserving the name, is formed by a line of low rocky islets. The trade of T. has declined, being superseded by that of Beyrout; its exports now consist chiefly of silk, sponges, and tobacco: there are manufactures of soap. T. is regularly visited by the steamers of the French Messageries. It is the see of a Greek bishop. —Pop. estimated 17,000; with its port, 24,000—nearly half being Christians.

The anc. T., an important maritime city of Phœnicia, stood on the plain, where immense numbers of granite shafts and other relics of antiquity are still found. Its name (*Three Cities*, or the *Triple City*) was from its being founded by the cities of Tyre, Sidon, and Aradus, as an entrepôt for trade and a point of federal union. It was for many centuries a place of great commercial importance.

TRIPOLI, n. *trĭp'ō-lĭ:* a polishing-powder originally brought from *Tripoli*, in Africa, but now from many other places—an infusorial earth of a whitish-gray or yellow color, soft, light, and friable, yielding readily to the nail, and crumbling down in water like rotten-stone. It has a coarse, dull, earthy fracture, is rough to the touch, and is of gray, yellow, or red color. The particles which compose it are the siliceous frustules of *Diatomaceæ* and the curious forms of Polycistines (protozoan), which occur unaltered in it, and are united without visible cement. Ehrenberg estimated that every cubic inch of Bilin T. weighing 220 grains contained 41,000,000,000 of these minute water-weeds. Deposits of T., often called infusorial earth, occur in the Tertiary rocks in every quarter of the world. TRIP'OLINE, a. *-lĭn*, pertaining to tripoli.

TRIPOLITZA, *trē-pō-lĭt'sâ* (' three cities '), official name TRIPOLIS: town of Greece; under the former Turkish rule, cap. of the Morea; now chief town of the nomarchy or govt. of Arcadia; 22 m. s.w. of Argos, 39 s.w. of Corinth, in a plain 3,000 ft. above sea-level. It derives its name from being the modern representative of three anc. cities, Tegea, Mantinea, and Pallantium. In 1821 it was stormed by the Greek insurgents, and 1828 razed to the ground by the troops of Ibrahim Pasha; it has since been rebuilt. —Pop. (previous to 1821) about 20,000; (1889) 10,698.

TRIPOS, n. *trī'pŏs* [Gr. *tripous*, three-footed (see TRIPOD)]: a three-legged stool; at *Cambridge Univ.*, England, one of the honor-lists with its three classes—the *triposes* now embrace mathematics, classics, law, theology, etc., ten departments in all; the honors examination. TRIPOS-PAPER, a printed list of the successful candidates for mathematical, classical, and other honors. TRIPOSES, n. plu. *trī'pŏs-ĕz*, the three divisions in the list of mathematical, classical, and other honors, the mathematical consisting of (1) Wranglers, (2) Senior Optimes, (3) Junior Optimes—the classical and others being divided into first class, second class, and third class.

TRIP'PANT: in *her.*, term analogous to Passant (q.v.), but applied to animals of chase.

TRIPTEROUS, a. *trĭp'tėr-ŭs* [Gr. *treis*, three; *pteron*, a wing]: in *bot.*, three-winged, as a leaf.

TRIPTOTE, n. *trĭp'tōt* [Gr. *treis*, three; *ptōtos*, liable to fall]: in *gram.*, a noun used in only three cases.

TRIPTYCH, n. *trĭp'tĭk* [Gr. *treis*, three; *ptuchē*, a fold]: sacred pictorial representation, used generally as an altar-piece, consisting of three compartments, the centre one fixed, the other two (each about the half the width of the principal tablet) made to fold like doors on the centre one and cover it: a writing-tablet in three parts that can be folded into one. See DIPTYCH.

TRIQUETROUS, a. *trī-kwē'trŭs* [L. *triquetrus*, having three corners—from *tres*, three]: in *bot.*, having three angles, the faces being concave; in *anat.*, three-sided or three-cornered, as a bone. TRIQUE'TROUSLY, ad. *-lĭ.*

TRIREME, n. *trī'rēm* [F. *trirème*—from L. *trirēmis*, a trireme—from *tres*, three; *rēmus*, an oar]: a vessel with three benches or tiers of oars on each side; a galley having three banks of oars—said to have been employed first by the Corinthians in their war with Corcyra, B.C. 664. In the Persian and Peloponnesian wars, triremes were the largest vessels; but at the time of Alexander, galleys with four and five banks had gradually come into favor. In the Punic wars, the Carthaginians generally employed quinqueremes; and as the Roman triremes could have no chance against vessels with such high bulwarks, the Romans thenceforth constructed their war-vessels after the model of the Carthaginian quinquereme.

The banks of oars were elevated above each other, but not perpendicularly; and the lowest rank of rowers, having the shortest oars and easiest work, had least pay. The T. or the quinquereme was also provided with a square sail, which was used in voyaging when the wind was favorable, but not used in action. The crew numbered about 200; and on a smooth sea it was capable of considerable speed and accuracy of maneuvering. In earlier times, before the Persian war, and even later, victory depended more on the number and valor of the soldiers on board than on the skill of the seamen. Herodotus mentions that besides the crew there were 40 marines on each Ionian T.: the Athenians improved this system by decreasing the number of fighting men and trusting more to skilful management of their vessels. In a fight, the aim of every T. was not, as before, to grapple with its opponent, but to dash with the greatest momentum possible with its beak against the enemy's vessel, striking it amidship, or, at any rate, disabling his banks of oars on one side: hence, later, in the Peloponnesian wars, the number of marines in each ship was reduced to ten. This system of ram-fighting has come again into vogue. A contrivance, strengthening the prow of the T., and increasing its efficiency as a ram, gave the Syracusans their final victory over the Athenians in the harbor of Syracuse.

TRISAGION, n. *trĭs-ā'gĭ-ŏn* [Gr. *trisagiŏs*, thrice holy—from *tris*, thrice; *hagiŏs*, holy]: in the *Eastern Church*, the threefold invocation of the Deity as 'Holy, Holy, Holy;' one of the doxologies in use in the Greek Church, which is repeated in the form of versicle and responses by the choir in certain parts of the liturgy. The words of the Trisagion are: '*Hagios O Theos, Hagios Ischuros, Hagios Athanatos, eleison hemas!*' (O Holy God, O Holy Mighty One, O Holy Immortal, have mercy on us!). This doxology, in its original Greek form, is one of the few fragments of the Greek liturgy which (like the *Kyrie Eleison*) are retained in the original language in the Roman mass. It occurs in the service of Good Friday in the procession and veneration of the cross (see GOOD FRIDAY). The name T. is sometimes incorrectly given to the Sanctus (q.v.).

TRISE, v. *trīz:* among *seamen*, to haul up by means of a rope. TRĪ'SING, imp. TRISED, pp. *trīzd*. Same as TRICE 2, which see.

TRISECT, v. *trī-sĕkt'* [L. *tres*, three; *sectus*, pp. of *secārĕ*, to cut]: to cut or divide into three equal parts. TRISECT'ING, imp. TRISECT'ED, pp. TRISEC'TION, n. *-sĕk'shŭn*, the division of a thing into three equal parts; in *geom.*, the division of an angle into three equal parts.

TRISEPALOUS, a. *trī-sĕp'ă-lŭs* [L. *tres*, three, and Eng. *sepal*]: in *bot.*, having three sepals.

TRISEPTATE, a. *trī-sĕp'tāt* [L. *tres*, three; *septus*, pp. of *sepĭō*, I fence in]: having three partitions or septa in an ovary or fruit.

TRISMEGISTUS, *trĭs-mē-jĭs'tŭs* [Gr., Thrice-greatest]: epithet applied to the Egyptian Hermes (q.v.) or Thoth (q.v.) by the Neo-Platonists and the devotees of magic, alchemy, and mysticism generally, who deemed him the source of all mysterious doctrines: see HERMETIC BOOKS.

TRISMUS, n. *trĭz'mŭs* [Gr. *trizō*, I gnash]: lock-jaw; a kind of tetanus affecting the muscles of the jaw. TRIS'MUS NASCEN'TIUM, a form of lock-jaw occurring in newly-born children, caused mainly by impure atmosphere: see LOCK-JAW. In Iceland this disease annually carries off a large proportion of infants between the 5th and 12th days after birth. It is very frequent and fatal also in the W. Indies, where it is known as the 'ninth-day disease.' Another of its names is 'the jaw-fall,' from the jaw relaxing and dropping on the breast shortly before death. The disease, formerly common in hospitals, has become rare with the introduction of better ventilation. For treatment, immediate removal to a pure air, a warm bath, and a dose of castor-oil should be tried.

TRISOCTAHEDRON, n. *trĭs-ŏk′tă-hē′drŏn* [Gr. *tris*, thrice; *oktō*, eight; *hedra*, a base]: a figure having twenty-four equal faces.

TRISTAN DA CUNHA, *trĭs-tân′ dâ-kôn′yâ:* group of three islands and two small islets, belonging to Great Britain, in the s. Atlantic, midway between the coast of S. America and the Cape of Good Hope; 37° 5′ 50″ s. lat. The largest island, Tristan, is about 20 m. in circumference, having in the centre a volcanic cone 7,640 ft. high. Several sailors have resided on these islands for a longer or shorter time: one company on Tristan, left by a Brit. expedition 1817, numbered (1886) 97 persons. Inaccessible Island, 20 m. from Tristan, harbored two Germans for two years, who had a kind of Robinson Crusoe experience; but were glad of opportunity to leave by the Brit. ship *Challenger* 1873. Nightingale Island, 10 m. from Tristan, is the smallest of the three.

TRISTE, or TRIST, a. *trēst* or *trĭst* [F. *triste*—from L. *tristis*, sad]: sad; unhappy. TRIST′FUL, a. *-fûl*, in *OE.*, sad; melancholy; gloomy.

TRISTEARIN, n. *trī-stē′ă-rĭn* [see STEARIN]: the fatty body forming the greater part of mutton-fat; also called GLYCERYL TRISTEARATE.

TRISTICHOUS, a. *trĭs′tĭ-kŭs* [Gr. *treis*, three; *stichos*, a row]: in *bot.*, arranged in three vertical rows.

TRISTRAM, *trĭs′tram:* hero of a British legend, originally unconnected with King Arthur and the Round Table, though later minstrels have sought to interweave them.

T., having in infancy lost both parents, is brought up for the first fifteen years of his life at the court of the monarch who had slain his father, after which he proceeds to Cornwall, and is acknowledged by his uncle Mark, King of Cornwall, who appoints him his heir and successor. Having received a severe wound in a duel, he is cured by Ysolt or Ysonde, daughter of the queen of Ireland; and on his return to Cornwall informs his uncle of the marvellous beauty of the Irish princess. Mark sends his nephew to Dublin to solicit her hand in marriage. The king's suit is successful, and T. escorts her to England; but, both having unwittingly partaken of a love-potion (intended for Mark), they are immediately inflamed with a criminal passion for each other. Ysolt marries the king; but, by help of her maid, Brenqwain, she has secret interviews with her lover, and for some years succeeds in allaying the suspicions of her husband. At last, however, T. is banished; but his uncle, becoming reconciled to him, invites him back to court, where the amours of the lovers are renewed. Banished a second time, T. goes abroad: in Brittany he marries another Ysolt, called, for distinction, Ysolt *with the white hand*, daughter of the Duke of Brittany. In one of his exploits, he is desperately wounded, and can be cured only by Ysolt of Cornwall. A messenger was dispatched for her, with instructions to hoist a white sail if she accompanied him on his return; but if not, a black sail. As the vessel nears the shores of France, T.'s wife, Ysolt *with the white hand*, recognizes the white sail, and, jealous at the thought of a rival's approach, hurries to her husband's chamber, and tells him the messenger comes with black sails spread. T., in an agony of disappointed love, sinks back and expires. When the queen lands, and hears of his death, she rushes to the castle, throws herself on his corpse, and dies beside him. King Mark, learning the story of the love-potion, buries them in one grave, planting over Ysolt a rose-bush, and over T. a vine, which grew up so inextricably intertwined that no man could ever separate them.

The popularity of the story in the middle ages was unbounded. Sir Walter Scott's metrical version of *Sir Tristram* (1806) is from the Auchinleck MS., considered to be the composition of Thomas the Rymour (q.v.). As early as the middle of the 12th c., the legend had become a favorite throughout France; and subsequently found its way into Spanish, Italian, German, Scandinavian, Slavic, and Greek literature. *Tristan und Isolde* is the subject of one of Wagner's operas.—See Michel's *Tristan* (1835), and Bossat's (1865).

TRISYLLABLE, n. *trĭs-sĭl'lă-bl* [Gr. *treis*, three; *sullabē*, a syllable (see SYLLABLE)]: a word consisting of three syllables. TRISYLLABIC, a. *trĭs'ĭl-lăb'ĭk*, or TRIS'YLLAB'ICAL, a. *-lăb'ĭ-kăl*, consisting of three syllables; pertaining to a trisyllable: see note under DISSYLLABLE.

TRITE, a. *trīt* [L. *trītus*, pp. of *terĕrĕ*, to rub: It. *trito*, trite: Russ. *terete*, to rub]: worn out; hackneyed; common; stale; so common as to have lost all novelty and interest. TRITE'LY, ad. *-lĭ*, in a common manner. TRITE'NESS, n. *-nĕs*, the quality of being trite; staleness.

TRITERNATE, a. *trī-tėr'nāt* [L. *tres*, three; *terni*, three each]: in *bot.*, divided three times in a ternate manner.

TRITHEISM, n. *trī'thē-ĭzm* [Gr. *treis*, three, and Eng. *theism*]: the opinion or doctrine that the Father, Son, and Holy Spirit are three distinct Gods. TRI'THEIST, n. *-ĭst*, one who maintains tritheism. TRI'THEIS'TIC, a. *-ĭs'tĭk*, or TRI'THEIS'TICAL, a. *-ĭs'tĭ-kăl*, pertaining to tritheism.

TRITHING: see TRIDING.

TRIT'ICUM: see WHEAT: COUCH GRASS.

TRITON, n. *trī'tŏn* [L. and Gr. *Trītōn*]: a fabled sea-god, the son of Neptune, and Amphitrite, and trumpeter of Neptune; represented as having the upper part of the body like that of a man, and the lower like that of a fish. He dwells with his parents in a golden palace at the bottom of the sea, and usually figures as attendant on his father, riding over the Mediterranean on a horse or other sea-monster, soothing the turbulent waves by blowing his shell-trumpet—his 'wreathed horn,' as Wordsworth calls it. The later poets speak of Tritons, in the plural, as a race of subordinate sea-deities, described by Pausanias as having sea-green hair and eyes, gills below the ears, human noses, broad mouths with the teeth of animals, scales on their bodies, and a tail like that of a dolphin.

TRITON, *trī'ton:* genus of aquatic Salamandridæ belonging to the e. hemisphere. In some classifications allied Amer. genera are called tritons. Thus, *Spelerpes*, of family *Plethodontidæ*, has been classed as T. The European T., or Crested Newt, is *T. cristatus.*

TRITOZOOID, n. *trĭt'ō-zō'oyd* [Gr. *trĭtŏs*, third; *zōŏn*, an animal; *eidos*, resemblance]: in *zool.*, a zooid of the third generation.

TRITURATE, v. *trĭt'ū-rāt* [L. *trītūra*, a rubbing, chafing—from *trītus*, pp. of *tĕrĕrĕ*, to rub]: to rub or grind to a fine powder. **TRIT'URATING**, imp. **TRIT'URATED**, pp. **TRIT'URA'TION**, n. *-rā'shŭn*, the act of reducing to a fine powder. **TRIT'URABLE**, a. *-rā'bl*, capable of being reduced to a fine powder by rubbing or grinding.

TRIT'YL: see **PROPYL**.

TRIUMPH, n. *trī'ŭmf* [L. *triumphus*, a solemn and magnificent entrance of a general into anc. Rome after having obtained an important victory: Gr. *thriambos*, a procession in honor of Bacchus: F. *triomphe*]: the pomp with which a victory was celebrated in public by the anc. Romans; a victory; a conquest; state of being victorious; exultation for success: V. to celebrate a victory with pomp; to obtain victory; to exult in consequence of an advantage gained; to be prosperous. **TRI'UMPHING**, imp.: N. the act of one who triumphs. **TRI'UMPHED**, pp. *-ŭmft*. **TRI'UMPHER**, n. *-ŭmf-ĕr*, one who triumphs. **TRIUM'PHAL**, a. *-făl*, pert. to a triumph; serving to commemorate a victory; serving to betoken joy, or to give a joyful welcome. **TRIUM'PHANT**, a. *-fănt*, celebrating victory; rejoicing, as for victory; expressing joy for success; victorious. **TRIUM'PHANTLY**, ad. *-lĭ*, victoriously; with success. To **TRIUMPH OVER**, to overcome; to subdue. **TRIUMPHAL ARCH**, an arch erected to perpetuate the memory of a conqueror, or some remarkable victory or important event; a temporary erection in the form of an arch as a mark of rejoicing.—*Triumph*, the public honor bestowed in ancient Rome on a general successful in war, consisted in a solemn procession along the *Via Sacra* up to the Capitol, where sacrifice was offered to Jupiter. The victor sat in a chariot drawn by four horses—his captives marching before, his troops behind. Certain conditions had to be fulfilled before a T. could be granted, and it was the business of the senate to see that these were enforced. Under the empire, generals serving abroad were considered the emperor's lieutenants; therefore, however successful in their wars, they had no claim to a triumph, but received instead *triumphal decorations* and other rewards.

The appearance of Rome on the occasion of a T., especially in later times, was joyous in the extreme. All work was suspended; the temples were thrown open, and decorated with flowers; the populace, clad in holiday attire, crowded the steps of public buildings in the *Via Sacra*, and the forum, or mounted the scaffoldings erected to give view of the procession; banquets were spread before every door. As for the *imperator* (commander—see EMPEROR) himself, after having pronounced a eulogy on the bravery of his soldiers, he ascended his triumphal car, entered the city by the *porta triumphalis*, where he was met by the senate, and the procession began. The senate, headed by the magistrates, marched first; next a body of trumpeters; then a train of carriages and frames laden with the spoils; then a body of flute-players, followed by the oxen to be sacrificed, and the sacrificing priests, etc.; then the distinguished captives with bands of inferior prisoners in chains; after whom walked the lictors of the imperator, having the fasces wreathed with laurel. Next came the hero of the day—the imperator, in a circular chariot, attired in an embroidered robe (*toga picta*) and flowered tunic (*tunica palmata*), bearing in his right hand a laurel bough, in his left a sceptre, and having his brows garlanded with Delphic laurel. He was accompanied by his children and his intimate friends. His grown-up sons, and the legates, tribunes, and equites, rode behind; the rear being brought up by the rest of the soldiery, singing or jesting at their pleasure, for it was a day of carnival and license. When the procession had reached the Capitoline, some of the captive chiefs were taken aside and put to death; the oxen were then sacrificed, and the laurel wreath placed in the lap of Jupiter. In the evening the imperator was publicly feasted; and it was customary to provide him a site for a house at the public expense.

The *ovation*, or lesser T., granted for a great success which yet did not fulfil the specified conditions for a T., differed from the greater chiefly in these respects: that the imperator entered the city on foot, clad in the simple *toga prætexta* of a magistrate; that he bore no sceptre, was not preceded by the senate and a flourish of trumpets, nor followed by his victorious troops, but only by the equites and the populace; and that the ceremonies were concluded by sacrificing a sheep instead of a bull, whence, doubtless, the name *ovation* [from *ovis*, a sheep].

TRIUMVIR, n. *trī-ŭm'vėr* [L. *tres*, three: *trium*, of three; *vir*, a man]: one of three men united in the same office; plu. TRIUM'VIRS, *-vėrz*, or TRIUM'VIRI, *-vĭ-rī*. TRIUM'VIRATE, n. *-vĭ-rāt*, a company of three; in *anc. Rome*, one of several groups or companies of three men jointly charged with some municipal or state business, such as the *triumviri capitales*, who took cognizance of murders and robberies; *triumviri nocturni*, who watched over the safety of Rome in the night-time; *triumviri monetales*, or masters of the mint: specifically, in *Roman hist.*—(1) the coalition or private league by which Pompey, Crassus, and Cæsar—the three most powerful men of their time—sought to carry out their own schemes of political aggrandizement, in spite of the opposition of the senate. This compact was not a triumvirate in the proper sense of the term: it had no legally constituted existence: it was, in fact, only a conspiracy of three men against the authority of the state. (2) The division of government between Octavian (Augustus), Mark Antony, and Lepidus, in the civil wars that followed the murder of Cæsar—an arrangement sanctioned by the senate. The former is usually called the *first*, the latter the *second*, triumvirate.

TRIUNE, a. *trī'ūn* [L. *tres*, three; *unus*, one]: three in one—applied to God, in order to express the unity of the Godhead in a trinity of persons. TRIU'NITY, n. *-ū'nĭ-tĭ*, state of being triune; the Trinity.

TRIVALENT, a. *trĭv'a-lĕnt* [prefix *tri;* L. *valens*, *valentis*, powerful]: in *chem.*, equivalent to three units of any standard, especially to three atoms of hydrogen.

TRIVET: see TREVET.

TRIVIAL, a. *trĭv'ĭ-ăl* [F. *trivial*—from L. *triviālis*, that may be found everywhere, ordinary—from *trivĭum*, a cross-road—from *tres*, three; *via*, a road or way]: such as may be found everywhere; hence, commonplace; of little worth or importance; trifling; inconsiderable; slight; vulgar. TRIVIALITY, n. *trĭv-ĭ-ăl'ĭ-tĭ*, the state of being trivial: anything of little worth; a trifle. TRIV'IALLY, ad. *-lĭ*. TRIV'IALNESS, n. *-nĕs*, lightness; unimportance. TRIV'IUM, n. *-ŭm* [L.]: a name given in the middle ages to the three arts of grammar, logic, and rhetoric, constituting, as it were, a *triple way* to eloquence. TRIVIAL NAMES, the names added to the names of genera, which double or binomial names constitute the names of species, as *Triticum* is the generic name of certain cereals, while *Triticum vulgārĕ* is the specific name of one of the genus—viz., common wheat; same as SPECIFIC NAME, which see under SPECIFY.

TRI-WEEKLY, a. *trī'wēk-lĭ* [*tri*, and Eng. *weekly*]: occurring or appearing once every three weeks (less correctly, thrice a week), as a *tri-weekly* newspaper.

TROAD, *trō'ad*, THE: the land of ancient Troy (q.v.); bounded n. by the Hellespont and part of the Propontes; w. by the Ægean Sea; s. by the Gulf of Adramyttium; e. by the mountain range of Ida, at whose base stood the city of Troy: see TROY (ancient).

TROCAR, or TROCHAR, n. *trō'kâr* [F. *trocar*—from *trois*, three; *carre*, an angle—from L. *quadra*, a square—so called from its triangular point]: a surgical instr. for taking off fluids from parts of the body, as in dropsy.

TROCHAIC, or TROCHAICAL: see under TROCHEE.

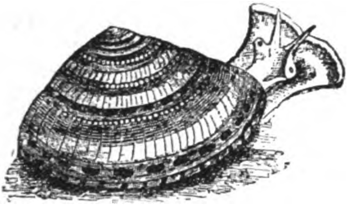
TROCHAL, a. *trō'kăl* [Gr. *trŏchŏs*, a wheel—from *trechein*, to run]: wheel-shaped.

TROCHANTER, n. *trō-kăn'tĕr* [Gr. *trochantēr*, a runner, the ball on which the hip-bone turns in its socket—from *trochazein*, to run along—from *trechein*, to run]: in *anat.*, one of the two processes or prominences at the upper part of the thigh-bone, called the *greater* and the *less*, in which are inserted several of the muscles used in motion. TROCHANTER'IC, a. *-tĕr'ĭk*, of or pertaining to the trochanters.

TROCHAR: see TROCAR.

TROCHEE, n. *trŏ'kē*, or **Trochæus**, n. *trō-kē'ŭs* [L. *trochæus;* Gr. *trochaios*, a trochee—from *trochos*, a running; *trechein*, to run]: a metrical foot of two syllables, a long followed by a short. **Trochaic**, a. *trō-kā'ĭk*, or **Trochaical**, a. *-ĭ-kăl*, consisting of trochees.

TROCHIDÆ, *trŏ'kĭ-dē:* family of gasteropodous mollusks, of order *Pectinibranchiata*, section *Asiphonata*. The shell has the aperture entire, closed with an operculum; spiral, and very generally top-shaped, as in the genus *Trochus*, the species of which are popularly known as Top-shells. The species are very numerous, and widely distributed. They feed on sea-weeds, and some are found on rocks between high and low water mark. Many are very beautiful, and some small kinds, strung together, are often employed by South Sea islanders for ornamental purposes, the epidermis and outer layer being removed, exposing the pearly substance of the shell. Some of the tropical ones attain large size. The T. are closely allied to *Turbinidæ*.



Trochus.

TROCHILICS, n. plu. *trō-kĭl'ĭks* [Gr. *trochilĭa*, a roller, a windlass; *trochos*, a wheel—from *trechein*, to run]: in *mech.*, the science of rotatory motion. **Trochil'ic**, a. *-ĭk*, having power to draw out or turn round, as a wheel; pertaining to rotatory motion.

TROCHILUS, *trŏk'ĭ-lŭs*, and **TROCHILIDÆ**, *trō-kĭl'ĭ-dē:* see **Humming-bird**.

TROCHLEA, n. *trŏk'lē-ă* [L. *trochlĕa*, a case containing one or more pulleys—from Gr. *trochos*, a wheel; *trechein*, to run]: in *anat.*, a pulley-like cartilage over which a tendon passes; one of the projections of bones over which parts turn as ropes over pulleys. **Troch'lear**, a. *-lĕ-ėr*, shaped like a pulley. **Troch'leary**, a. *-ėr-ĭ*, of or pertaining to the trochlea.

TROCHOID, n. *trō'koyd* [Gr. *trŏchŏs*, a wheel; *eidos*, resemblance]: in *geom.*, the curve described by any point in a wheel rolling on a straight line: **Adj.** conical with a flat base, as the shells of certain Foraminifera. **Trochoid'al**, a. *-koyd'ăl*, pertaining to a trochoid; in *anat.*, applied to the rotatory motion of one bone upon another.

TROCHU, *tro-shü'*, **Louis Jules**: French soldier: b. Palais, Morbihan, France, 1815, Mar. 12. He was educated at the St. Cyr Milit. School; became artillery lieut. 1837; served with high distinction under Bugeaud in Algeria;

won the rank of gen. of division in the Crimean war; commanded a division in the Italian campaign 1859. Before the Franco-German war he was Marshal Niel's successor in command of the Toulouse army division. After the battle of Sedan, T. was commander-in-chief at Paris till the city capitulated. His work *L'Armée française en* 1867 reached a 20th ed. 1870. In justification of the govt. of National Defense he published (1873) *Pour la Vérité et pour la Justice.*

TROD, pt. *trŏd;* **Trod**, or **Trodden**, pp. *trŏd'n:* see under **Tread**.

TROGLODYTE, n. *trŏg'lō-dīt* [Gr. *trōglodutēs,* one who creeps into holes—from *trōglē,* a hole, a cavern; *duein,* to enter]: one dwelling in a cave; a cave-dweller: specifically, in *hist.*, a member of certain races or tribes of uncivilized men who lived in natural caverns or in holes which they had dug for themselves in the earth; hence, one who lives so secluded a life as to be ignorant of current events. **Trog'lodyt'ic**, a. *-dĭt'ĭk,* or **Trog'lodyt'ical**, a. *-dĭt'ĭ-kăl,* pert. to a troglodyte or dweller in caves.—*Troglodytes* are mentioned by Strabo as existing in Mauritania and the Caucasus; but perhaps the best-known troglodytes were those of s. Egypt and Ethiopia, where a considerable district was called *Regio Troglodytica.* They could not speak articulately, but shrieked or screamed like the lower animals: the Greeks, however, are not very trustworthy authorities in the matter of language—accounting every dialect which they did not understand a barbarous jargon. The chief occupation of the troglodytes was herding cattle, though we read that they were also hunters and robbers. They are mentioned also as serving among the light troops in the army of Xerxes. Their habits of life were rude and debased; they are reported to have eaten the bones and hides as well as the flesh of their cattle; their drink was a mixture of milk and blood; and they had a community of wives. The women tattooed their bodies; the men wore skins or went unclothed. Their treatment of the dead was very revolting: they bound the corpse neck and heels together, fixed it to a stake, pelted it with stones, amid shouts of laughter, and then buried it beneath a cairn, placing a horn on the top.

What measure of truth there may be in the stories about the troglodytes, it is now impossible to say; but archæological investigations have led to the conclusion that a race of cave-dwellers preceded in most countries the races that lived in houses built on the ground; and perhaps we shall not be far wrong if we regard Troglodytism as the primitive state of mankind in very many countries.

TROGONIDÆ, *trō-gŏn'ĭ-dē:* family of birds, ranked by some naturalists, on account of their habits, in order *Insessores* and tribe *Fissirostres;* but more generally, on account of the formation of the feet—two toes before and two behind—placed in the order *Scansores.* The T. are remarkable for beauty of plumage, which is soft, full, and brightly colored. The bill is short, strong, with a wide gape: tail generally long; feet are small. All the T. are tropical; they belong chiefly to s.e. Asia, the Indian Archipelago, and S. America. They inhabit forests, where they sit motionless on branches, waiting for insect prey, darting on insects as they fly past. They make their nests in the hollows of decayed trees. Their flesh is esteemed for flavor. They all are of small size. In brilliancy of plumage, some are excelled only by humming-birds. The Imperial T. (*Calurus resplendens*), the Quesal of Central America, is the extreme of beauty; brilliant metallic green in color, the effect heightened by separated feather-filaments like floss, and the tail-coverts forming a long plumy train.

TROIC, a. *trō'ĭk* [L. *Troicus*]: of or pertaining to ancient Troy or the Troas; Trojan.

TROIZK, or **TROITSK**, *trō-ētsk':* town of e. Russia, govt. of Orenburg; 420 m. s.w. of Tobolsk.—Pop. (1884) 18,000.

TROJAN, n. *trō'jăn:* an inhabitant of anc. Troy; *familiarly*, a courageous fellow: ADJ. pert. to anc. Troy (q.v.).

TROLL, v. *trōl* [Ger. *trollen*, to roll, to troll: Low Ger. *drulen*, to roll: Swiss, *trohlen*, to thunder, to roll: Norw. *trulla*, to trundle: Low Ger. *trül*, anything of a rounded form: W. *trolio*, to trundle, to roll]: to roll or trundle; to move or utter volubly; to turn; to drive about; to sing the parts of in succession, as of a round; to draw on; to fish with a rod having the line running on a reel near the handle: N. a reel at the handle of a fishing-rod round which the line is rolled; a song the parts of which are sung in succession. TROLL'ING, imp.: ADJ. rolling; driving about; fishing with a rod and reel; more particularly, fishing by dragging a long line with a hook and fly behind a boat which is pulled or sailed at a brisk pace, as in *trolling* for mackerel. TROLLED, pp. *trōld*. TROLL'ER, n. *-ėr*, one who trolls. TO TROLL OR TROWL THE BOWL, to push the bowl round. TROLLEY, or TROLLY, n. *trŏl'li*, a kind of truck which can be tilted over by removing pins which attach it to the frame, and used for running on tracks, as with railway materials, etc.; a large, flat, heavy cart without sides. TROLLEY, n. grooved metal wheel for rolling in contact with an electric conductor overhead or underground (the trolley-wire), to convey the current to a motor-car. Colloq. the T. system; a road operated on that system; or a car pertaining to such a road; usually with the definite article. TO TROLL A SONG, to roll it out with rise and fall of the voice [probably the equivalent of Swiss *tralallen*, to sound notes without words—from a representation of the notes by the syllables *tra-la-la*].

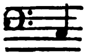
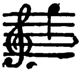
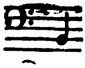
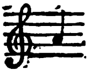
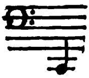
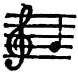
TROLL, n. *trŏl* [Icel. *troll;* Dan. *trold*, a hobgoblin]: in *Scand. myth.*, a supernatural being superior to man in strength and stature, but much beneath him in mind; in the folk-lore of Iceland, one of a race of giants; in later Norse story, a diminutive sprite, inhabiting gorgeous apartments in the interior of hills. In modern Denmark the term is indiscriminately applied to all hobgoblins, imps, and spirits of the *brownie* type.

TROLLOP, n. *trŏl'lŏp* [from Eng. *troll*, to roll or trundle: Scot. *trollop*, to hang in a wet state]: a strolling loitering woman; a woman loosely and negligently dressed; a draggle-tail; a drab.

TROLLOPE, *trŏl'ŭp*, ANTHONY: English novelist: 1815, Apr. 24—1882, Dec. 6; b. London; second son of Mrs. Frances Trollope. He was educated at Winchester and Harrow. While filling a responsible official situation in the post-office, he found or made leisure to amuse the public with a long series of novels, of remarkable merit. The first work which attracted attention, *The Warden*, 1855, was followed by a continuation, *Barchester Towers*, which is perhaps the cleverest of all his books. In rapid succession came *Doctor Thorne*, *The Bertrams*, *The Three Clerks*, *Castle Richmond*, *Framley Parsonage* (originally pub. in the *Cornhill Magazine*), *The Kellys and the O'Kellys*, *Orley Farm*, *The Small House at Allington* (contributed to the *Cornhill Magazine*), *Rachel Ray*, *Miss Mackenzie*, *Can You Forgive Her?* *Ralph the Heir*, *The Golden Lion of Granpere*, *Ayala's Angel* (1881). Besides these, T. published volumes on *The West Indies and the Spanish Main*, on *North America* (1862), on *Australia* (1873), and on *South Africa* (1878), a Life of *Cicero* (1881), and sketches of *Thackeray* (1879) and *Palmerston* (1882). His *Autobiography* appeared 1883. T. sketches the superficial aspects of society with a charming lightness, and his works are unfailingly agreeable and amusing.

His elder brother, THOMAS ADOLPHUS T., has lived for many years at Florence, and is favorably known by his *Girlhood of Catherine de Medici; A Decade of Italian Women;* and a number of novels such as *La Beata; Marietta; Lindisfarn Chase; Gemma; The Garstangs; The Dream Numbers.* He has written a *History of Florence* and *Life of Pius IX.*

TROL'LOPE, FRANCES (MILTON): novelist and miscellaneous writer: 1780–1863, Oct. 6: b. Heckfield, Hampshire, England; daughter of an English clergyman. In 1809 she was married to Anthony T., barrister-at-law. In 1829 she came to the United States, where, during a 3 years' residence (in Cincinnati, O.), she amassed the materials of her first book, *Domestic Life of the Americans*, 1832, which attracted great attention, and revealed the American sensitiveness of that period by the indignation which it caused: it would now excite rather amusement. From this time, the literary activity of Mrs. T. was uninterrupted, and her name became notable. Novels of society and impressions of travel make up the sum of her works. Of her novels the most successful is, perhaps, *The Widow Barnaby* (3 vols. 1839), with its sequel, *The Widow Married* (3 vols. 1840); followed by *The Barnabys in America, or Adventures of the Widow Married.* Mrs. T. was a woman of talent, and her works show shrewd observation and true (though at times somewhat coarse) humor. They were popular in their day, but are now almost forgotten. During her later years much of her time was passed in Italy, where her eldest son, Thomas Adolphus T., had made his abode. She died at Florence.

TROMBONE, n. *trŏm'bōn* [It. *trombone*—from *tromba*, a trumpet (see TRUMPET)]: large deep-toned brass instrument, of the trumpet species, consisting of two separate parts, so constructed that the two ends of one fit into those of the other, and consequently, by sliding one part in or out, the tube through which the air passes may be shortened or lengthened, and the pitch changed at pleasure. Three kinds of T. are in general use, differing in pitch: the *Alto Trombone*, with a compass from  to ; the *Tenor Trombone*, with a compass from  to ; and the *Bass Trombone*, with a compass from  to . The music for these instruments is written on the alto, tenor, and bass clefs respectively. There is also a *double-bass* T., rarely used. The T. judiciously employed, is very effective in an orchestra—the tone being grander and more powerful than that of the trumpet.

TROMOMETER, n. *trŏ-mŏm'ĕ-tėr* [Gr. *tromos*, a trembling; *metron*, a measure]: an instrument for measuring earth-tremors, usually by observation of the motion of pendulums.

TROMP, *trŏmp*, CORNELIS VAN: Dutch admiral: 1629, Sep. 9—1691, May 29; b. Rotterdam; son of MARTIN HARPERTZOON T. (q.v.). He became vice-admiral at the age of 21 yrs., having already gained distinction in actions in the Mediterranean against corsairs and the English. When the Dutch fleet under Opdam was defeated off Solebay by the English, Van T. made a masterly retreat, 1665. He served again with distinction in the war of 1673. Afterward he commanded the navy of Denmark.

TROMP, *trŏmp*, MARTIN HARPERTZOON, *hâr'pĕrt-sōn:* famous Dutch admiral: 1597–1653, July 29; b. Briel, s. Holland. When a boy, he went to sea with his father, commander in the Dutch navy. In an engagement with an English cruiser off the coast of Guinea, his father was killed, and young T. made prisoner, and compelled to serve as cabin-boy for two years and a half. In 1622 he entered the navy and served as lieut. on a ship of the line, two years later receiving command of a frigate. In 1629 the famous Admiral Peter Heijn (q.v.) took command of T.'s ship, and was killed by his side. Disgusted by some real or imaginary slight, T. retired about this time from the service. In 1637 he returned, was created lieut.-admiral, and appointed to command a squadron of 11 ships. He now prosecuted a vigorous naval war against the Spaniards, taking in one celebrated action, 1639, Oct. 21, 13 richly laden galleons. But the events which rendered his name famous occurred 1652–3, during hostilities between England and Holland. In 1652, May 19, he encountered the Eng. fleet under Blake (q.v.). The Dutch were defeated with the loss of two ships, and T. was for a while superseded by Ruyter and De Witt. He was soon afterward reinstated, and Nov. 29 again encountered Blake in the Strait of Dover, and was so successful that the English fleet was forced to retire; T. sailing up the Channel with a broom at his mast-head, to denote that he had swept his foes from the seas. Before long, however, the English returned, and, Monk and Deane having united with Blake, they attacked T. near Portland, 1653, Feb. 16, and defeated him, though only after a contest memorable for obstinacy. It lasted three days, at the close of which the English had taken or destroyed 11 ships of war and 30 merchantmen, killed 2,000 of the enemy, and captured 1,500. June 2 and 3 following, another battle took place, off North Foreland, 6 Dutch vessels being captured, 11 sunk, and the remainder driven into Calais roads. July 29 the warfare was again renewed off the coast of Holland, when the Dutch lost 30 men-of-war, and Admiral T. was killed.

T. was a thorough seaman, homely in manner, benevolent in disposition, and enthusiastic in his calling. He was buried at Delft with great pomp and solemnity.

TROMPE, or **Tromp,** n. *trŏmp* [F. *trompe;* It. *tromba,* a trumpet (see Trumpet)]: furnace-blower; blowing apparatus used in the Catalan forge. Water is made to fall through a pipe that has side-openings through which air is sucked—thus producing a continuous air-current, which is conveyed to the forge. **Tromp'il,** n. *-ĭl,* an aperture in a tromp.

TROMSÖE, *trŏm'sö-ĕh:* small island off the n.w. coast of Norway, in the amt or county of T., between Kvalö and the mainland; is 4 m. long, and about 1¼ m. broad. On the e. side of the island is the small but thriving town of T., cap. of the amt, and seat of a bp. Russian vessels from Archangel and the White Sea bring corn, which they exchange for dried fish. The herring fishery is very productive, and there is some trade in bear-skins and furs. —Pop. of amt (1882) 60,000; of town (1882) 5,409.

TRON, n. *trŏn,* or **Trone,** n. *trōn* [mid. L. *trona,* a steelyard—from L. *trutĭna;* Gr. *trutanē,* a balance: comp. Icel. *trana,* a crane: Gael. *trom,* heavy, weighty]: a steelyard-balance: specifically, in Scotland, a heavy beam or balance set up in the market-place, and employed in weighing heavy wares; hence, when applied to weights, T. means, of the standard employed in the public markets. The T. lb. contains 20 oz., but, from the custom of giving 'one in' to the score, was generally reckoned at 21 oz. But the value varied in different market-towns from 20 to 28 oz. The later T. stone or standard weight contains 16 T. lbs., each lb. 16 T. oz., and each T. oz. 16 drops; the T. lb. is estimated to equal 1·3747 lbs. avoir. **Tron church**, the church in the market-place.

TRONA, n. *trō'nă* [of n. African origin]: a crude sesquicarbonate of soda, occurring in crystalline incrustations in the deserts of Africa and Asia, and in the dried-up lakes and river-courses of S. America, where it is called *urao.*

TROND'HJEM: see **Throndhjem.**

TROON, *trôn:* important seaport, county of Ayr, Scotland; 8 m. s.w. of Kilmarnock, and 6 n. of Ayr. The greater part of the town (not older than the 19th c.) occupies a bare and level promontory; but along the strand of Ayr Bay stretches a row of handsome villas and cottages nearly half a m. long, occupied chiefly by summer visitors. The place is yearly becoming more attractive as a sea-coast residence, on account of its salubrity and splendid beach. The harbor occupies the extremity of the promontory, is secure and spacious, and much frequented. The principal exports are coal and iron, of which Ayrshire yields an abundant supply.—Pop. 2,888.

TROOP, n. *trôp* [Sp. *tropa;* F. *troupe;* It. *truppa*—from mid. L. *tropus*, a troop: perhaps from L. *turba*, a crowd: comp. W. *torp*, a round mass]: a number of persons in a body or line; a multitude; a division of a regiment of cavalry under a captain, two troops (of 60 troopers each) making a squadron; any band or company, as of actors: V. to collect in numbers; to march in a body or in company with some degree of haste. **Troop'ing**, imp. **Trooped**, pp. *trôpt.* **Troop'er**, n. *-ėr*, a horse-soldier. **Troops**, n. plu. *trôps*, soldiers in general; an army. **Troopship**, a ship for the conveyance of soldiers by sea. **Trooping the colors**, a ceremony performed at the public mounting of garrison guards. **Troops of the line**, all infantry regiments except the foot guards.

TROOPIAL, or **Troupial**, *trô'pi-al:* name of various birds, rarely used, derived presumably from their associating in flocks or *troops*, and probably applied first to some birds of genus *Cassicus*, but used also for members of the family *Icteridæ*. It has sometimes been given to the cowbird of N. America. See **Cow-pen Bird.**

TROOST, *trōst*, **Gerard**: naturalist: 1776, Mar. 15—1850, Aug. 14; b. Bois-le-Duc, Holland. He studied in the universities of Amsterdam and Leyden. Enabled by the munificence of King Louis Bonaparte to pursue nat. hist. studies in Paris, he there translated Humboldt's *Aspects of Nature* into Dutch. He settled in Philadelphia, Penn., 1810, and was one of the founders of the Acad. of Nat. Sciences there 1812; became prof. of mineralogy in the Philadelphia Museum, prof. of chemistry and mineralogy in Nashville (Tenn.) Univ. 1827, Tenn. state geologist 1830–49. He made the largest mineral and geological collections of his time in the United States.

TROPÆOLUM, n. *trō-pē'ŏ-lŭm* [Gr. *tropaion*, a trophy—in allusion to the resemblance of the leaves to bucklers or shields, and the flowers to helmets]: extensive genus of plants, mostly climbing, with orange-red or yellow flowers; nat. order *Tropæolaceæ*, and allied to *Balsaminaceæ* and *Geraniaceæ*. The species are not numerous, and all are natives of S. America. They are smooth herbaceous plants, somewhat succulent, with acrid or pungent taste, trailing or twining stems, and alternate simple or divided leaves, destitute of stipules. The species of the genus T. form the greatest part of the order, and have usually simple peltate leaves. *T. majus* is the well-known INDIAN CRESS, whose unripe fruit is often used to give pungency to pickles, under the very mistaken name *Nasturtium*—the Nasturtium being a genus of Water-cresses of a different family, *Cruciferæ*, and including the Horse-radish. The T. is a native of Peru, and has long been much cultivated in Britain as an ornamental plant, climbing among bushes or on trellises, and taking hold by the curving stalks of its leaves; its stems six to ten ft. long, foliage abundant; flowers large, orange, or dark red. The young leaves are used in salads. The Indian cress is really a perennial, though it flowers a few months after sowing, and in Britain is always treated as an annual, not enduring the winter. *T. minus* is very similar, but of weaker growth, and its flowers are smaller. *T. peregrinum*, though much more recently introduced than the Indian cress, has become almost as common, and is a great favorite in window-gardens: it is popularly called the CANARY PLANT. Its stems are long and slender, and it speedily covers a high trellis. Several other species are frequent and fine ornaments of gardens and greenhouses. The tubers of *T. tuberosum* are eaten in Peru: their taste is peculiar.

TROPE, n. *trōp* [F. *trope*—from L. *tropus;* Gr. *tropos*, a trope—from *trepō*, I turn: It. *tropo*]: in *rhet.*, a change in the signification of a word from a primary to a derived sense; a word or expression used in a sense different from that which it usually signifies; a word used figuratively. TROPICAL, a. *trŏ'pĭ-kăl*, figurative, as the use of a word. TRO'PICALLY, ad. *-lĭ*. TRO'PIST, n. *-pĭst*, one who deals in tropes. See also TROPOLOGY.

TROPHI, n. plu. *trō'fī* [Gr. *trophos*, a feeder—from *trephein*, to feed]: those parts of the mouth in insects which are concerned in the acquisition and preparation of food. TROPHIC, a. *trŏf'ĭk*, or TROPH'ICAL, a. *ĭ-kăl*, connected with nourishment; nourishing; nutritious. TROPHOSOME, n. *trŏf'ō-sōm* [Gr. *sōma*, body]: the collective assemblage of the nutritive zooids of any hydrozoon.

TROPHONIUS, *trō-fō'nĭ-ŭs:* in Greek mythology, a skilful architect; son of Erginus, King of Orchomenus, or of Apollo. With his brother, Agamedes, he built the temple of Delphi and the treasury of King Hyrieus in Bœotia. After death he was worshipped as a hero, and had a celebrated oracle in a cave at Lebadeia (Livadia) in Bœotia. 'The entrance to the oracle was a very narrow aperture on the summit of a mountain, protected by a marble parapet about two cubits in height, and by brazen spikes above it.' The votary who wished to enter the 'Cave of Trophonius, to consult the oracle, after preparing himself for several days by purification and sacrifice, lay on his back, put his feet into the cave, and, caught by some unseen force, was pulled inside.

TROPHOSPERM, n. *trŏf'ō-spėrm* [Gr. *trophos*, a feeder; *sperma*, seed]: in *bot.*, the placenta.

TROPHY, n. *trō'fĭ* [F. *trophée*, a trophy—from L. *tropæum;* Gr. *tropaion*, a sign and memorial of victory, consisting originally of a trunk of a tree on which were fixed the arms. shields, helmets, etc., taken from the enemy—from *tropē*, a turning, a putting to flight—from *trepō*, I turn: It. *trofeo*]: anything taken from an enemy which can be shown as evidence of victory; something preserved as a memorial of victory; articles of produce or manufacture artistically arranged and exhibited. TRO'PHIED, -*fid*, adorned with trophies.—A *Trophy* was originally a memorial of victory erected on the spot where the enemy had turned to flight. Among the Greeks (except the Macedonians, who erected no trophies), one or two shields and helmets of the routed enemy, placed on the trunk of a tree, served as the sign and memorial of victory. After a sea-fight, the trophy consisted of the beaks and stern-ornaments of the captured vessels, set up on the nearest coast. It was considered wrong to destroy such a trophy; and equally wrong to repair it, when it had fallen down through time, for animosity ought not to be perpetual. In early times, the Romans never erected trophies on the field, but decorated the buildings at Rome with the spoils of the vanquished. In later times, pillars and triumphal arches were reared to commemorate victories.

TROPICAL, a. *trō'pĭ-kăl:* figurative: see under TROPE.

TROPICAL, a. *trŏp'ĭ-kăl:* pertaining to the tropics: see under TROPICS.

TROP'IC-BIRD: bird of genus *Phaëton*, ranked by some in family *Pelecanidæ*, by others in *Laridæ*. The bill is strong, pointed, and almost arched; the head completely feathered; wings are long; tail is short, except two very long and slender feathers. Only two species are known, both tropical, and often seen far from land. The COMMON TROPIC-BIRD (*P. æthereus*) is about the size of a partridge, white, with curved lines of black on the back; some of the quill-feathers black, tipped with white. It is found in the Atlantic; while in the Indian and Pacific oceans the other species (*P. phœnicurus*) appears, of pale rose-color, with black wing coverts, and the long feathers of the tail red. The T.-B. breeds on high cliffs.

TROPICS, n. plu. *trŏp'iks* [L. *tropĭcus;* Gr. *tropĭkŏs*, of or belonging to a turn or turning—from *trepō*, I turn: F. *tropique:* It. *tropico*]: the two circles of the celestial sphere, one n. and the other s. from the equator at a distance of about 23° 28′, and parallel to it, within the limits of which the sun moves in his yearly course—the one n. of the equator, the *Tropic of Cancer*, the one s., the *Tropic of Capricorn;* the region between the tropics: see ARMILLARY SPHERE. The *tropics* mark out the limits of the torrid zone, or that portion of the earth's surface over any part of which the sun is vertical twice in the year. Their distance from the equator is not absolutely fixed, but the limits of their variation are very narrow. For 1882, Jan. 1, the *Nautical Almanac* gives their position as 23° 27′ 16″·6 n. and s. respectively. TROP'ICAL, a. *-ĭ-kăl*, or TROP'IC, a. *-ĭk*, pertaining to or incident to the tropics; being within or near the tropics. TROP'ICALLY, ad. *-lĭ*.

TROPOLOGY, n. *trō-pŏl'ŏ-jĭ* [Gr. *tropos*, a trope; *logos*, discourse]: a rhetorical or figurative mode of speech. TROPOLOGICAL, a. *trō-pŏ'lŏj'ĭ-kăl*, varied or expressed by tropes; figurative.

TROPPAU, *trŏp'pow:* town, cap. of Austrian Silesia, on a tributary of the Oder, 184 m. n.e of Vienna by railway, near the Prussian border. It is the seat of the provincial govt., and has a castle, cathedral, several palatial buildings, churches, and public schools, a library of 32,000 vols., a museum of Silesian antiquities, important manufactures of machinery, cottons, linens, and beet-root sugar; and active transit trade.—Pop. (1880) 20,562; (1888) 22,500.

TROT, n. *trŏt* [F. *trotter;* It. *trottare*, to trot: Gael. *trot*, to trot: Ger. *trott* or *trapp*, the sound of the footfall: W. *trotio*, to trot: Ger. *treten*, to step]: the pace of a horse or other quadruped faster than walking, the limbs moving in pairs diagonally, but not quite simultaneously; an affectionate name for a child; a contemptuous name for an old woman: V. to move faster than a walk; to cause to move fast. TROT'TING, imp.: ADJ. moving with a trot. TROT'TED, pp. TROT'TER, n. *-tėr*, a quadruped that trots. TROT'TERS, sheep's or pigs' feet cooked.

TROTH, n. *trŏth* [AS. *treowthu*, truth—from *treowe*, true: Icel. *tryggth*, troth, truth (see TRUE)]: faith; fidelity; truth. TROTH'LESS, a. *-lĕs*, in *OE.*, faithless. TROTH-PLIGHTED, a. having fidelity pledged.

TROTTOIR, n. *trŏt-wâr'* [F.]: the footway on each side of a street; the foot-pavement.

TROUBADOUR, n. *trô bâ-dôr'* [F. *troubadour*—from Prov. *trobador*—from *trobar*, to find, to invent: Sp. *trovador;* It. *trovatore*, a troubadour: F. *trouver;* Sp. *trovar;* It. *trovare*, to invent, to compose—perhaps from mid. L. *tropus*, a song, singing, in *classical L.*, a trope (see Trope)]: one of a school of lyric poets who flourished in the eleventh, twelfth, and thirteenth centuries in the s. of France, n. of Spain, and n. of Italy. In Provençal poetry (see Trouvère), a T. was a polished and cultivated poet—what the Germans call a *Kunstdichter* (art poet)—who did not make a trade of his muse; as distinguished from the musician and jongleur, who wandered about the country singing for money. This distinction only gradually showed itself. At first, all classes of the community were nearly equally rude, and what pleased the peasant in the shape of song, pleased the prince also; but by degrees, a superior refinement and sensibility manifested themselves in the tastes and manners of courts, and this superiority found poetical expression in a more artistic verse. Great nobles, princes, and kings who practiced verse-making for their pleasure, or out of chivalrous gallantry, were always called troubadours; while inferior knights, court-attendants (M. Lat. *ministeriales;* hence *menestrels*, minstrels), and even citizens and serfs who lived by their art, or at least took money for the exercise of it, were called sometimes troubadours, sometimes jongleurs: see Minstrel: also Romance: Romanic Languages. The more celebrated troubadours had one or several such jongleurs in their service, as it was considered *infra dig.* for a poet to be his own fiddler. This new T. poetry (*art de trobar*), which was *lyrical*, while the popular minstrelsy was mainly of the *epic ballad* sort, exercised considerable influence on the advancement of literature and culture generally; yet those who practiced it never formed themselves into a guild, or into special schools, but preserved a certain individualism, which gives picturesqueness to the outlines of their history. At all the courts (great and small) in s. France, n. Spain, and Italy, they were esteemed a brilliant ornament of society; princes and fair dames (often themselves troubadours) were proud of their praise, or dreaded the raillery of their satiric muse; while, on the other hand, the majórity of the troubadours gladly attached themselves to the court of a great prince or noble, sometimes praising their master in *sirventes* (service-songs), sometimes censuring him, but at any rate, always selecting some lady as the 'mistress of their heart,' to whom they, under a general or allegorical name, addressed their love-songs (*cansos*), and whose cruelty they bewailed in songs of lamentation (*planes*), or whose death they mourned in threnodies. Although the 'love-service' of the troubadours was often merely artificial gallantry, yet frequently the sport passed into fatal earnest, with consequences of adultery, murder, and revenge.

When, as often happened at great court-festivals, several troubadours were present, they often indulged in competitions or verse-battles (*tensons*) among themselves, for gratification of the high society assembled; mostly on questions selected by the ladies from the 'Laws of Love;' one or more of these ladies sitting as umpires at such poetic jousts, and deciding who were the victors. But though the troubadours as a rule monotonously confined themselves to themes of gallantry, yet sometimes their muse, especially in its satiric moods, ventured into higher regions, and glanced at the general conditions of society, or the graver evils of the times—as the persecution of the Albigenses; the degeneracy of the clergy; the diminishing zeal for the Crusades, etc.; or they even descended to depict the life of the peasantry, and sang their adventures with shepherdesses, etc. in *pastoretas* and *vaqueyras*. The most illustrious patrons of the troubadour poetry were the counts of Provence, particularly Raimund Berengar III. (1167–81), Alphonse II. (1196–1209), and Raimund Berengar IV. (1209–45); the counts of Toulouse, as Raimund de St. Gilles, who joined the ranks of the Crusaders 1096. Raimund V. (1148–94), and Raimund VII. (1222–49); Richard *Cœur de Lion* of England, himself a T.; Eleanor, wife, first of Louis VII. of France, afterward of Henry II. of England; Ermengarde, Viscountess of Narbonne; the kings of Aragon, as Alfonso II. (1162–96), Pedro II. (1196–1213), and Pedro III. (1276–85); the kings of Castile, as Alfonso IX. (1188–1229), and especially Alfonso X. (q.v.), surnamed the Wise; several Italian princes, as Bonifacio, Count of Montferrat, and after 1204 king of Thessalonica; and Azzo VII. of Este (1215–63). These names also indicate the extent of territory on which the T. poetry was cultivated—viz., Provence, Toulouse, Poitou, Dauphiné, or briefly France s. of the Loire; Catalonia, Valencia, and Aragon in Spain; and part of upper Italy. It lasted about 200 years (1090–1290); and three periods can be distinguished in its history: (1) The period of its genesis, or its development out of mere popular minstrelsy into artistic poety (1090–1140); (2) its golden age (1140–1250); (3) the period of its decline (1250–90). The second of these periods shows the loftiest expression of ideal chivalry and gallantry, and the most perfect development of artistic form. The last period was marked by an increasing serio-didactic tendency, and degeneracy in poetic art. Thus the poetry of the troubadours rose, and ruled, and fell with that courtly chivalry which was its inspiration.

The long list of troubadours begins with **GUILLEM IX.**, Count of Poitiers (1087–1127): his life and works appear to have been equally immoral.—**BERNARD DE VENTADOUR** (1140–95), one of the first troubadours of the golden age, was the son of a poor serf of Vicomte Ebles II. of Ventadour: he celebrated in fiery and delicate strains the charms of Ebles's wife, Agnes de Montluçon, and of his later patronesses, Queen Eleanor, Joanna of Este, etc.—**MARCABRUN** (1140–85), a foundling, was murdered by the castellan of Guian for an exercise of his fatal gift of satire: he is reckoned the inventor of the art-song (*Cansós*). —**JAUFRE RUDEL**, Prince of Blaya (1140–70), is famous for his languishing love-songs and for his romantic passion for the Countess of Tripoli, whom he never saw till he was at the point of death.—**Peire d'Auvergne** (1152–1215), produced songs more remarkable for artistic finish than for poetic inspiration.—**Guillem de Cabestaing** (1181–96), was famous for his tragic love for the wife of his lord, Raimon de Roussillon.—**Richard the Lion-heart's** song composed during his captivity in Austria is widely known; and the songs of **Guirant de Borneil** (1175–1220) have a manly ring; but perhaps the most celebrated of the whole fraternity was **Peire Vidal** (1175–1215), wondrously endowed with poetic gifts, but whose mad, wasteful, immoral life makes his sanity doubtful.—**Bertrand de Born** (1180–95), celebrated as warrior and poet, produced songs mostly martial and patriotic.—**Folquet de Marseille** (1180–1231), after wasting his youth in amorous gayeties, in a fit of grief for the death of one of his many mistresses, entered the priesthood, became bp. of Toulouse, and persecuted the Albigenses with fanatical zeal: his 25 songs are of an impassioned nature.—**Rambaut de Vaqueiras** (1180–1207), native of s. France, son of a knight, was so great a favorite with Bonifacio II., Marquis of Montferrat, that the marquis tolerated his sister's intimacy with the poet; he accompanied his patron to the East, and probably fell with him fighting against the Bulgarians.—**Peirot** (1180–1225) produced some of the finest love-songs of the troubadours.—**The Monk of Montaudon** (1180–1200) is a T. whose proper name is not known: he was of a noble family in Auvergne, and became prior of Montaudon; but led the free life of a wandering poet: his songs are full of personalities against his brother troubadours—very cynical and very caustic.—**Arnault Daniel** (1180–1200), nobleman of Riberac, in Périgord, whom Petrarch calls *il grande maestro d'Amore:* Dante also celebrates his genius.—**Gaucelm Faidit** (1190–1240), who left his wife, and, as a T., sang the praises of Countess Marie of Ventadour; afterward, in revenge for her prudence, entering into intrigues with other women.—**Raimon de Miravol** (1190–1220), one of the most lovable of the troubadours, though bitterly abused by the women poetesses of his time.—**Savarie de Mauleon** (1200–30), French baron, grand seneschal of Aquitania; noted for his *Tenzone.*—**Peire Cardinal** (1210–30), son of a knight, and who travelled with his jongleur from court to court, and having Jago I. of Aragon as his great patron: he satirized the nobles and clergy.—**Guiraut Riquier** (1250–94), native of Narbonne, last representative of the troubadours, and whose most distinguished patron was Alfonso X. of Castile: his poems, full of complaints of the disrepute into which his order had fallen, are the swan-song of T.-poetry.

See Diez, *Leben und Werke der Troubadours* (Zwickau 1829); Fauriel, *Histoire de la Littérature Provençale*, 3 vols. (Par. 1846); Galvani, *Osservazioni sulla Poesia de' Trovadori* (Modena 1829), and *Fiore di Storia letteraria e cavalleresca della Occitania* (Milan 1845); De Laveleye, *Histoire de la Langue et de la Littérature Provençale* (Bruss. 1845);

Mahn, *Die Werke der Troubadours* (Berl. 1846), and *Die Biographien der Troubadours* (Berl. 1853); Brinckmeier, *Blumenlese aus den Werken der Troubadours* (Halle 1849), and *Rügelieder der Troubadours* (Halle 1846); Kannegiesser, *Gedichte der Troubadours* (Tüb. 1852), and *Ungedruckte Provenzal. Lieder* (1853); Bartsch, *Grundriss zur Geschichte der Provenzalischen Literatur* (1872); Bayle, *La Poesie Provençale au Moyen Age* (1876).

TROUBLE, n. *trŭb'l* [F. *troubler*—from a supposed mid. L. *turbulārĕ*, to trouble, to disturb—from L. *turba*, a crowd: Gr. *thorubĕō*, I disturb]: disturbance of mind; that which causes agitation or disturbance of mind; distress; anxiety; uneasiness; difficulty; labor or laborious effort: among *miners*, any shifting of the strata of a coal-field by which the regular and continuous working of its minerals is interrupted: V. to disturb; to put into confused motion; to grieve; to make uneasy; to molest; to engage overmuch; to give occasion of labor to, as, 'I shall not *trouble* you to write'; in *OE.*, to disorder. TROUB'LING, imp. *-lĭng:* N. the act of molesting or annoying; the act of afflicting. TROUBLED, pp. *trŭb'ld:* ADJ. disturbed; disordered. TROUB'LER, n. *-lėr*, one who troubles. TROUBLESOME, a. *trŭb'l-sŭm*, causing annoyance; tiresome; giving inconvenience to; harassing; importunate; teasing; irksome; vexatious. TROUB'LESOMELY, ad. *-lĭ*. TROUB'LESOMENESS, n. *-nĕs*, the state or quality of being troublesome; irksomeness. TROUB'LOUS, a. *-lŭs*, agitated; full of trouble or disorder; causing great anxiety and distress.—SYN. of 'trouble, v.': to disturb; annoy; perplex; afflict; grieve; fret; distress; busy; tease; vex; harass;—of 'trouble, n.': molestation; obstruction; inconvenience; distress; grief; sorrow; calamity; misfortune; adversity; embarassment; misery.

TROUGH, n. *trŏf* [Icel. *trog;* Dan. *trug;* Wal. *troc;* Ger. *trog*, a trough]: a long hollow vessel of wood, stone, or metal, open at the top, for holding feeding-stuffs for animals, etc.; the channel that conveys water, as to a mill; in *geol.*, any sudden depression of strata by which they are made to assume a basin-shaped arrangement. TROUGH OF THE SEA, the long hollow between two waves. TROUGH-JOINT, in *geol.*, the fissure or joint frequently found to pass through the middle of the curvature of any sudden depression of strata.

TROUL, v. and n. *trowl:* same as TROLL 1 (q.v.).

TROUNCE, v. *trowns* [OF. *tronce*, a piece of wood; *troncer*, to mutilate, to tear in pieces: Sp. *tronzar*, to shatter: F. *tronçon*, a truncheon or short staff (see TRUNK)]: to beat with a truncheon: to cudgel; to punish severely; to scold or reprimand; in *OE.*, to defeat utterly; to discomfit. TROUNC'ING, imp. TROUNCED, pp. *trownst.*

TROUP, *trôp*, ROBERT, LL.D.: lawyer: 1757–1832, Jan. 21; b. New York. He graduated at Columbia College, and then studied law; entered the army as lieut. 1776; was made prisoner in the battle of Long Island, and was exchanged 1777; was aide to Gen. Gates at Saratoga. T. was several years judge in N. Y., and member of the legislature. He wrote occasional pamphlets on political issues.

TROUPE, n. *trôp* [F. *troupe*—from mid. L. *tropus*, a company (see TROOP)]: a company, especially used of stage-players, circus-performers, minstrels, and the like; a band; a troop.

TROUS-DE-LOUP, n. *trô'dĕ-lô'* [F. *trou*, hole; *de*, of; *loup*, wolf]: *literally*, wolf-holes; holes and pitfalls dug in the form of inverted cones, about 6 ft. deep and 4½ in. in diameter, having pointed stakes fixed in the bottom, and almost reaching the top. They are placed often thickly about the glacis and approaches to a fortress; the object being to break the ranks and otherwise disorganize an attacking force.

TROUSE, n. *trowz* [Gael. *triubhas;* Ir. *trius*, breeches (see TROUSERS)]: in *Scot.* and *OE.*, breeches and stockings in one piece—an anc. Irish dress; trousers. TROUSED, a. *trowzd*, wearing trousers.

TROUSERS, n. plu. *trow'sérz* [Gael. *triubhas*, trews, trousers: W. *trws*, covering, dress: F. *trousse*, a truss, a bundle, breeches—from *trousser*, to tuck, to fasten up (see TRUSS)]: a garment, usually called a 'pair of *trousers*,' worn by men and boys, extending from the waist to the ankles, covering the lower part of the trunk, and each lower limb separately; pantaloons. TROU'SERING, n. *-sér-ĭng*, cloth used for making trousers.

TROUSSE, n. *trows:* the loppings from growing timber; the old spelling of TRASH (q.v.).

TROUSSEAU, n. *trôs-sō'*, TROUSSEAUX, n. plu. *trôs-sōz'* [F. *trousseau*, a small bundle, an outfit—from *trousse*, a truss, a bundle (see TROUSERS): comp. Gael. *trusadh*, a gathering, a collection]: *literally*, 'a bundle'; the outfit of a woman about to be married, consisting of personal clothing, trinkets, presents, and the like; a bride's clothes.

TROUT, n. *trout* [AS. *truht;* F. *truite;* It. *trota*—from L. *tructa;* ML. *trutta*, a trout: Gr. *trōktēs*, a voracious sea-fish—from *trōgein*, to gnaw, to bite—*lit.*, 'the nibbler']: the popular name of many species of the genus *Salmo*, as characterized by Cuvier, but now, in N. America, referred to two groups. The first left under the genus *Salmo* (see Salmon), includes the Atlantic Salmon and the black-spotted species of the west, the Rainbow T. (*S. irideus*) of the Pacific slope, the Rio Grande T. and two closely related forms of the Rocky Mt. region, the Steel-head of the Columbia, the Quinnat or California T. and its allies (genus *Oncorhynchus*), and the common Black-spotted T. (*S. Clarkii*) of the upper Missouri river. The second group includes the Chars, or Red-spotted T. of various species, and the gray-spotted species known as Salmon T. or Lake T.—all of this group placed in the genus *Salvelinus*. Of this group are the Lake T. (*S. Namaycush*), resembling our Brook T. (*S. fontinalis*) and, like it, very variable, but sometimes attaining 120 lbs.; and the Dolly Varden T. (*S. malma*), known in Siberia as the Malma or Golet, and ranging in salt and fresh water from the upper Sacramento to Kamtchatka, and variously known as Bull T., Salmon T., Speckled T., etc.

In Great Britain the name is given to some of the silvery species, migrating to the sea, and to all the yellow species, which constantly inhabit fresh waters. For the former, see Salmon: the present article is concerned with the latter.

Trouts are found in almost all lakes and rivers of the temperate and colder parts of the n. hemisphere. The Common T. (*Salmo fario* or *Salar Ausonii*) is widely diffused in the e. hemisphere, abounding in almost all lakes and rivers of the Brit. Islands and of n. Europe. It is found even in very small streams, and almost to their mountain sources, but attains its largest size where there is considerable depth of water and abundance of food. An instance is on record of a T., caught in England, in a branch of the Avon at Salisbury, weighing 25 lbs.; but such a size is very rare; and even in ponds where T. are regularly fed, they seldom exceed 10 lbs. The color is more or less yellow, but the tint varies much in the T. of different waters, sometimes passing into greenish black or violet. On the back and upper part of the sides are numerous spots of black and red; the belly is silvery white. The spots on the sides vary much. The fins are light brown; the dorsal fin and tail with numerous darker brown spots. The varieties which the Common T. exhibits in tints and spots has led to the erroneous supposition that there are several distinct species. The T. of a river with a muddy bottom are very different from those of a clear stream; and those of a stream darkly colored by moss are easily distinguished. The tint of the flesh varies as well as the external colors, being pink in some—the finest for the table—and white in others. It has been found that T. transferred from one locality to another soon change their tints.

The leaping of T. for flies in a summer day or evening is one of the features of many a rural scene. Small T. often throw themselves quite out of the water; the larger ones in general merely rise to take struggling flies from its surface. The angler adapts his lures to the season and the weather. In spring and summer, when the weather is fine, the artificial fly is very successful; bait, generally the worm, is used in wet weather, or when the streams are much swollen by rains. The minnow is a good bait for large T. No bait is more deadly than salmon roe, but the use of it is prohibited by law in Britain, for the sake of the salmon-fisheries.—See ANGLING.

The T. spawns generally in the end of Oct., when the lower jaw of the male becomes elongated, but not so much as in the salmon. The spawn is deposited in the same manner as that of the salmon, in gravelly beds, in running streams; and the T. of lakes ascend streams for this purpose. See PISCICULTURE. The T. grows rapidly when it has abundant food. From instances of individuals kept in wells and ponds, it is known to attain an age of 30 or even 50 years.

Among varieties of the Common T., one called the GILLAROO T. is found in lakes of n. Ireland: it attains a large size, is very thick in proportion to its length, and has much smaller teeth than the ordinary trout.—The LOCH LEVEN T. (*Salmo Levenensis* or *S. cæcifer*) is found in Loch Leven in Scotland, where the Common T. also is found; and is distinguished from it by the more pointed pectoral fins and in other respects.—The GREAT LAKE T. (*Salmo ferox*) is the only other British species: it is found in some larger Brit. and Irish lakes, and in the lakes of Scandinavia, seldom, if ever, ascending rivers, except for a short distance at the spawning season. It attains a weight of almost 30 lbs., is a very powerful, active fish, and tries the skill of the angler in no small degree. It is as greedy as a pike. It differs from the Common T. in the longer muzzle, in the position of the fins, in having the tail square in all stages of growth, and in other characters. Its color is generally deep purplish brown, passing into greenish or grayish yellow on the belly. The spots are large and not numerous. It is taken by night-lines, or by trolling with strong tackle and a small T. or other small fish for bait. Young fish are taken with the artificial fly. The flesh of this species is much inferior in quality to that of the Common T.—Very different from it is the LAKE T. of the Lake of Geneva (*Salmo* or *Fario Lemanus*), a fish of excellent quality, and nearly allied to the Salmon Trout (see SALMON): it ascends the rivers which fall into the lake. TROUT-COLORED, a. white, with spots of black, bay, or sorrel. TROUT-STREAM, a running water or river in which trouts abound. TROUT'LET, n. *-lĕt*, or TROUT'LING, n. *-lĭng*, a small trout.

TROUVERE, n. *trô-vār'*, or TROUVEUR, n. *trô-vėr'* [F. *trouvère*, a poet—from *trouver*, to find, to invent, to compose (see TROUBADOUR, with which it is identical)—*lit.*, one who finds or invents]: one of a class of early descriptive poets, epic in their form and style, who flourished in the n. of France. Like the Troubadour (q.v.) of s. France, he was usually attended by a jougleur, whose business it was to furnish an instrumental accompaniment to the songs which his master composed and sung. Sometimes, but rarely, the T. himself played on a harp. On the other hand, if minstrels and jongleurs were ambitious enough to aspire to original composition—e.g., Adenez le Rois, Raymbert de Paris, etc.—they were nicknamed 'Bastard Trouvères' (*Troveor bastart*), or 'interloping rhymers' (*Contre-rimoieurs*). This disdainful feeling was not less strong from the fact that the poetry of the trouvères was high in favor at the northern courts, and that even kings and nobles were proud of the 'accomplishment of verse.' Among these princely and patrician amateurs were Thibaud of Champagne, King of Navarre; Jean de Brienne; Charles d'Anjou; Henri III. of Brabant; Pierre de Dreux, Count of Brittany, etc. The great patrons of the trouvères were the kings of France and England, the Dukes of Brabant, the Counts of Champagne, Flanders, etc.; while by the Anjou dynasty of the kings of Naples their art was carried into s. Italy, and by Henry of Burgundy into Portugal. Their number consequently became considerable; and there are still reckoned the names and works of more than 150, of whom perhaps the most celebrated is the Castellan de Coucy.—See De la Rue, *Essais Historiques sur les Bardes, les Jongleurs et les Trouvères Normands et Anglo-Normands* (3 vols. Caen 1834); Dinaux, *Trouvères, Jongleurs et Menestrels du Nord de la France et du Midi de la Belgique* (3 vols. Par. 1837–43); Paris, *Le Romancero Français* (Par. 1833); Wackernagel, *Altfranz. Lieder* (1846); Mätzner, *Altfranz. Lieder* (1853); Bartsch, *Altfranz. Romanzen* (1870); Scheler, *Trouvères Belges* (1876).

TROVER, n. *trŏ'vėr* [OF. *trover;* F. *trouver;* It. *trovare*, to find—according to Diez, from mid. L. *turbārĕ*, to move, to seek for, to find (but see TROUBADOUR)]: the finding of anything: in *law*, (1) the obtaining possession of any goods by finding them, or by various means other than by purchase; (2) a common-law action brought to recover goods from a person to whom they do not belong, but who has in some way obtained possession of them. Such an action was originally founded on the old fiction that the rightful owner had accidentally lost the goods, and the party in possession had found them, and would not give them up to such owner. It is practically an action to try the title to the goods, and therefore is of extensive application in the law of contracts, as well as other branches of law. When, in an action of T., judgment is given for the plaintiff, the defendant must make good the damage and repay the costs of action: the amount of damages is the value of the property when taken by defendant, with interest. When plaintiff is defeated, the defendant recovers costs.

TROW, v. *trō* [AS. *treowian*, to trust, to believe; *treowa*, trust, faith (see TRUE)]: in *OE.*, to think; to imagine; to conceive; to believe: *trow* is also used with *I* (expressed or understood) as an exclamation of inquiry or surprise, and is nearly equal to 'I wonder.' TROW'ING, imp. TROWED, pp. *trōd*.

TROWBRIDGE, *trō'brĭj:* ancient town of Wiltshire, England: on a rocky eminence in the valley of the river Mere or Biss, 10 m. s.e. of Bath, about 98 m. w. of London. In the church of St. James, which dates from the 14th c., Crabbe the poet officiated as clergyman 1814–32, and his remains repose under a monument in the chancel. The town, since the reign of Henry VIII., has been the seat of woolen manufactures, much extended in recent years; cassimeres, kerseys, tweeds, and woolen cloths of the best qualities are made. Many handsome villas have been erected outside the town by the prosperous manufacturers.—Pop. urban sanitary dist. (1871) 11,508; (1881) 11,041.

TROW'BRIDGE, WILLIAM PETIT, PH.D., LL.D.: engineer and physicist: b. Oakland co., Mich., 1828, May 25. Having graduated at West Point 1848, he was assigned to the engineer corps, and was appointed assistant in the astronomical observatory of the milit. acad.; then became first assistant to Prof. Bache of the coast survey. He made the surveys of the Appomattox river, Va., 1852, and of the James river near Richmond, and recommended the 'cut-off' which was executed later. He made magnetic and tidal observations on the Pacific coast 1853–56; then resigned his commission in the engineer corps, but became permanent assistant to Prof. Bache on the coast survey. At the opening of the civil war, T. made detailed descriptions of the s. coast for the use of the navy; then he took charge of a branch office of the engineer dept. at New York, and superintended several defensive works in New York harbor. He was prof. of mechanical and dynamic engineering in Yale 1870–77, and then was appointed to a like professorship in Columbia College, New York. To scientific thoroughness he added admirable gifts as an instructor. Besides his official reports on govt. works, he was author of valuable memoirs in scientific periodicals and of a volume on *Steam Generators*. Died 1892, Aug. 12.

TROWEL, n. *trow'ĕl* [F. *truelle;* L. *trulla*, a trowel, dimin. of *trua*, a stirring-spoon, a ladle]: a flat, somewhat broad tool used to take up and spread mortar; a similar scoop-shaped tool, used by gardeners. TROW'ELLED, a. *-ĕld*, formed with a trowel.

TROWS, n. plu. *trowz:* supernatural beings in Orkney and Shetland similar to TROLLS (see TROLL 2).

TROWSERS: another spelling of TROUSERS (q.v.).

TROY: city, cap. of Rensselaer co., N. Y.; on the Hudson river at head of steamboat navigation, near the Champlain and Erie canals and the mouth of the Mohawk river; and on the New York Central and Hudson river, the Fitchburg, and the Delaware and Hudson Canal Co.'s railroads; 6 m. n. of Albany, 151 m. n. of New York; 5½ sq. m. The greater part of the site of T. was purchased from the Mohegan Indians 1659, and it was laid out as a village under the name of Vanderheyden by people from New England 1787. The name was changed to T. 1789; the first religious organization (First Presb. Chh.) was formed and the first newspaper issued 1791; the first church building was erected 1792, and the village became the seat of the co. buildings 1793; was incorporated 1796, and given a city charter 1816. Much of the city is built on a plain, whence the surface rises to a range of hills on the n. and e., 300–400 ft. above the river—Mt. Ida, on the e., and Mt. Olympus, on the n., being the most conspicuous elevations. Water is obtained from the Piscawen kill in the n., the Poesten kill, about 2 m. s., and the Wynants kill in the s.; and excellent motive power is furnished by the Hudson river, here dammed by the state, by the kills and numerous small dams. The villages of West Troy (q.v.) and Green Island, on the opposite side of the river, are connected with T. by bridges and street railroads, and the villages of Lansingburg and Waterford and the city of Cohoes are connected with it by steam and street railroads. All the street railroads are operated by electricity. T. has long been noted for extent and variety of manufactures. The first Bessemer steel works in America were built here. In 1880 the various manufactures had $13,418,853 capital, 22,434 hands, and $26,497,163 in value of products. The chief industries according to value of products were: iron and steel, $8,702,189; foundry and machine-shop products, $3,228,848; shirts and collars, $2,919,591; men's furnishing goods, $2,636,614; malt liquors, $895,883; men's clothing, $685,436; paper, $546,823; tobacco, cigars, and cigarettes, $406,661; hosiery and knit goods, $391,330; and flour and grist mill products, $367,855.—In 1890 there were 39 manufacturing establishments in the city, including the Troy Steel and Iron Co.'s plant (comprising the former Albany Iron Works, the Bessemer Steel Works, and the Rensselaer Iron Works, and three blast-furnaces on Breaker Island); the Burden Iron Works; 5 stove foundries; collar, cuff, and shirt factories; and manufactories of passenger, freight, and street cars, bells, mathematical and engineering instruments, printing, wall, and wrapping paper, cables and chains, steam-engines, boilers, machinery, fire-brick, furniture, carriages, mineral paints, and other articles.

In 1891, Jan., the city had $771,974 net debt; $141,850,296 real property valuation; $5,200,000 personal; $1.17 tax-rate on $100; 8 national banks (cap. $1,890,000), 2 savings banks, 2 private banks; and 4 daily, 6 weekly, 1 collegiate, and 2 monthly publications. There were 64 churches—viz.: Presb. 15; Meth. Episc. 12; Rom. Cath. 10; Prot.

Episc. 8; Bapt. 6; Luth. 4; Hebrew 3; Church of Christ 2; and Christ. Advent, Union, Unit., and Univ., each 1. The principal educational institutions were the Troy Female Seminary, Rensselaer Polytechnic Institute (q.v.), St. Joseph's Provincial Seminary (Rom. Cath.), Troy Acad., St. Mary's Commercial Acad., the Troy Commercial College, and 15 public schools. The charitable institutions included the Troy Orphan Asylum, St. Vincent's Female Orphan Asylum, Troy Hospital, St. Mary's Male Orphan Asylum, the Marshall Infirmary, day and church homes of the Presb. and Prot. Episc. Churches, Home for the Aged Poor, and the House of the Good Shepherd. The Troy Y. M. Assoc., the Troy Railroad Y. M. C. A., and the Troy Young Women's Assoc., all are prominent and prosperous societies, with libraries and reading-rooms. Among public and notable buildings are the new City Hall, Griswold's and Rand's opera-houses, Music Hall, Gaiety Theatre, Masonic Hall, Rensselaer Polytechnic Institute, Germania Hall, Young Women's Assoc. building, Troy Savings Bank, Troy Club-house, U. S. govt. building, Polytechnic Alumni Hall, Gardner Earl Memorial Chapel, Gurley Memorial Hall, Troy Orphan Asylum, Union railroad depot, and the Soldiers' and Sailors' Monument on Washington Square. Oakwood Cemetery, one of the most beautiful burial-places in the country, contains the graves of Gen. George H. Thomas, 'the Rock of Chickamauga,' and of Gen. John E. Wool. At the latter is a monument 75 ft. high, said to be the largest stone quarried in 3,000 years.

T. is divided into 13 wards; has a mayor elected for two years and a common council of two members from each ward; obtains water for general purposes from reservoirs on the Piscawen kill, and from the Hudson by means of the water-works plant at Lansingburg; is lighted by gas and electricity, and has a large trade by railroad and water. Commodious steamboats ply daily and nightly on the Hudson between T. and New York, affording a picturesque excursion.—Pop. (1880) 56,747; (1890) 60,956.

TROY: town, cap. of Miami co., O.; on Great Miami river and the Miami canal, and on the Cincinnati Hamilton and Dayton and the Cleveland Cincinnati Chicago and St. Louis railroads; 20 m. n. of Dayton, 68 m. w. of Columbus. The swift current of the river affords excellent power for many manufactories. The town is in an agricultural region, and contains a court-house, municipal building, 10 churches, high and graded public schools, several flour-mills, 2 national banks (cap. $260,000), and 2 daily and 5 weekly newspapers.—Pop. (1880) 3,803; (1890) 4,494.

TROY (known also as ILIUM or ILION or ILIOS): ancient city in the n.w. corner of Asia Minor, of great legendary and poetic celebrity. The earliest traditions of the Greek people, in their oldest poetry and history, represent the country on both sides of the Ægean as peopled by various races, either of genuine Hellenic or of closely affiliated tribes. Among those who peopled the e. or Asiatic coast are specially named the Pelasgi, the Leleges, the Caucones, the Carians, the Lycians, and the Trojans. These last, to whom Homer's poem has given a celebrity that throws all the rest into the shade, occupied (conjecturally B.C. 12th c.) the small promontory in the n.w. corner of Asia Minor, best defined, perhaps, as the region of Mt. Ida, with its topographical dependencies. That the Trojans were either a Greek race or some non-Hellenic people under a Greek dynasty seems probable, from the absence in Homer of any such decided national contrast between Greeks and Trojans as we find in mediæval poetry between Christians and Saracens. Local legends represented them as closely connected with Crete; and Homer in the *Iliad*, xx., makes Priam the sixth in descent from Dardanus, first of the dynasty, who was supposed to have come from Crete. The story of the Trojan war, which forms the subject of Homer's great poem the *Iliad*, is very simple. The Trojans, in the person of Paris, or Alexander, son of the reigning monarch, Priam, are represented as having had certain dealings with the Achæans, or Greeks of the Peloponnesus, in the course of which the gay young prince of T. carries off from the palace of Menelaus, King of Sparta, his spouse Helen, the greatest beauty of her age. To revenge this insult, the Greeks banded themselves together, and sailed against T. with a great fleet. All the Greek tribes afterward famous in history took part in this expedition; but the most notable were the Argives or Achæans—Greeks of the e. and n. Peloponnesus and adjacent isles; the Spartans—Greeks of the s.e. dist. of the Peloponnesus; the Neleids—Greeks of the w. coast of the Peloponnesus; the Bœotians; and the Thessalians. Of the Thessalians, the most prominent capt. was Achilles; and the general command of the expedition was committed to Agamemnon, King of Mycenæ, as head of the most numerous contingent, and at the same time the brother of the royal personage Menelaus, whose hospitality had been so grossly violated. This well-appointed European army is represented as having spent nine years in besieging the divinely reared walls of Priam's city without making any impression on its strength. A violent quarrel between Achilles and Agamemnon, breaking out in the tenth year, so weakened the invading force that the Trojans, under Hector, pushed the Greeks back to the very verge of the sea, and almost set their ships on fire: this quarrel forms the subject of the *Iliad*. At the critical moment, however, the Thessalian capt. is reconciled to Agamemnon, the head of the expedition; and with his return to the field, the fortune of war changes: Hector, the champion of T., falls, and the impending doom of the city is darkly foreshadowed. The siege and sack of T. were not within the plan of Homer's poem, but are narrated at length in the *Post Homerica,* Greek poem by Quintus Smyrnæus, poet of the decadence. The Greeks possessed a long series of popular poems called the Cyclic poems, in which the whole sequence of the Trojan story was narrated, giving completeness to the brilliant fragment which had been adorned by the genius of Homer. From these poems—of which the abstracts are still preserved—Virgil derived those materials which he has used with such effect in the second and third books of his great poem, the *Æneid* (see ÆNEAS). The Cyclic poems, besides the events in the Trojan war after the death of Achilles, contained an account of the various colonies in Italy and elsewhere believed to have been founded by the scattered chiefs of the expedition after their return home. Of these, the settlements of Diomede, Philoctetes, and Idomeneus, on the s.e. coast of Italy, and that of Æneas, on the banks of the Tiber (Rome), are the most famous. The chronology of the Trojan war, depending mainly on artificial construction from genealogical data, is not trustworthy; but there are good reasons for believing that the generally received date of the burning of T., B.C. 1184, is not far wide of the mark: some authorities advocate the date B.C. 1127. After the fall of the kingdom of Priam, the story of T. is short and uneventful. Under the Lydian kings, whose dynasty culminated in Crœsus, a New T.—*Ilium Novum*—began to creep into notice, which, from the glory that belonged to its name, and the favor of Alexander the Great, Julius Cæsar, and other influential visitors, grew into some significance. The interest which attached to it, however, in its most flourishing estate, was more antiquarian than political.

How far the events of the Trojan war, as found in Homer and the Cyclic poets, are historical, depends on the view taken of the general character of the materials of popular ballad-poetry in all countries. That there is in the general case an under-stratum of historical reality, out of which the earliest popular poetry grows, may be assumed as certain. But equally certain is the strong tendency, in early uncritical ages, to erect on this foundation a purely imaginary superstructure. At the same time, there is a very great difference observable in the popular poetry of different nations as to the greater or less amount of trustworthy historical matter which lies imbedded in the imaginative conglomerate. The excess of the imaginative, fanciful, and altogether improbable element is found in the English Arthurian and French Carlovingian romances. In Homer, on the other hand, there is a sobriety of tone, a geographical clearness, and a general air of verisimilitude, which incline the reader to accept the historical reality of the main facts. In the first chapter of Herodotns, we find the Phœnicians practicing the very same act of abduction, though in a more violent form, which the poet represents as having kindled the famous ten years' warfare between Greece and T.; and even in the most general view, the war of T. between rival peoples on the opposite sides of the Ægean may be deemed the natural overture of those great struggles by which, on the same theatre afterward, the fate of the world, indicated by the preponderance of the European over the Asiatic element, was more than once decided.

The Plain of Troy is formed by the débris of the great chain of mountains which terminates the peninsula of Asia Minor on the n.w., where it is separated from Europe by the Sea of Marmora and the narrow strait of the Dardanelles. This chain of mountains is called Ida by Homer [*ide*, wood]; and its highest peak toward the s. side of the Troad, overhanging the Bay of Adramyttium, is celebrated by the same poet as Gargarus. West from this chain, the land slopes gradually down by a series of undulating ridges to the s. coast of the Dardanelles; and the plain included between these ridges and the sea is the plain of Troy. It is surrounded on all sides by elevated ground, by hills and mountains toward the e. and s.e., and by rocky ridges or cliffs along the coast. At one place only does it open to the sea, and this is at the extreme n.w. corner, where it meets the s. end of the Dardanelles: here is a stretch of sandy shore about two m. in length, beginning behind the Turkish fort of Koumkale, and trending eastward. This is the only place where a fleet such as that described in the *Iliad* could effect a permanent landing; and here, accordingly, by general consent, the encampment of the Greeks is placed. The eastward promontory which bounds this bay is universally acknowledged as the Rhætean promontory of the ancients, while that on the w. is the Sigean. Here, also, as the natural mouth of the plain, the principal river, by whose action mainly it was formed, finds its way into the sea. This river is the Mendereh, obviously a corruption of the Homeric Scamander, called also by the poet Xanthus, from *xanthos*, i.e., the *yellow* river, from the color of its waters—a quality noticed by most modern travellers. Looking up the plain from any of the heights about the mouth of the river s.e. toward Gargarus, one can easily trace its course about nine m., where it emerges into the plain through a defile in the mountains: nine m. is thus the extreme length of the plain of Troy. Its breadth is about three m. It presents the appearance of 'a long tract of meadow-land, inclosed within a girdle of low, round-backed hills, and prettily garnished by many lines of trees, which skirt the water-courses.' These waters, except the Scamander, are not large enough to be termed rivers, but are mere mountain torrents or brooks, generally dry in summer, some of them merely a sort of natural drains or ditches. Those worthy of note are three: the first flowing from the chain of Ida w. into the plain, about three m. from the sea, called the *Dombrek;* a second in the same direction, about five m. further up, called the *Kimair:* the third streamlet rises at the head of the plain, near the Turkish village of Bunarbashi, and, creeping along the bottom of the slope toward the Archipelago, forms the boundary of the plain on the w., and empties into the Mendereh, about two m. above its mouth. One of these three streams must be the Homeric Simois.

The topography of a plain so famous in the history or the legend of human civilization has occupied the attention of the learned in ancient and modern times; and a considerable library could be formed of volumes in which this region has been described, and its most famous localities discussed. The topographical result of these voluminous discussions can, however, now be given in a few sentences. In the first place, after 70 years of confusion and hallucination, it may be regarded as established, that the Mendereh is the Scamander. It is also universally allowed that *Novum Ilium*, or New Troy, occupied the site of Hissarlik, on an eminence about four m. from the mouth of the river, on its right bank, near the bend of the Dombrek. Among the many works on this question, notable are those of Le Chevalier (1790), Ulrichs, Welcker, and Maclaren; but all speculations and researches sink into insignificance compared with those of Dr. Heinrich Schliemann (q v.). This great archæological explorer (1870) began at his own cost, on the hill of Hissarlik, those excavations continued, with some interruptions, about 12 years, whose results have given him lasting fame. His excavations at Mycenæ 1876 also had much success; but the Trojan explorations have been of much greater importance, and have been given to the world in three several works in German and English—*Trojan Antiquities* (1875); *Ilios* (1880); and *Troja: Results of Latest Researches and Discoveries on the Site of the Homeric Troy* (1883).

Troy (called also Ilion, Ilios), at the foot of Mt. Ida, was circled with strong walls, and defended by a citadel, Pergamos, in which were numerous temples, chief among them the temple of Pallas. The site of this early T. was determined by Le Chevalier (1786) to be on the rocky eminence Bunarbashi, and to certain tumuli at this spot he gave the names 'Priam's grave,' 'Hector's grave,' etc. Schliemann, however, considered the remains of walls on Bunarbashi to belong mostly to a later period, the Hellenic. Farther down in its course the Mendereh (Scamander) bends w.n.w., and there the ancient bed of the Scamander stretches further northward, parallel to the present course of the river. On the e. bank of this ancient bed of the Scamander is an eminence extending n. to the valley of the Dombrek-Tshai (prob. anc. Simois): this is Hissarlik, a hill rising about 112 ft. above the plain. On this height, toward the end of B.C. 6th c., a new and Æolic Ilion arose, which attained some importance in Roman times: on the site are remains of a temple of Athene and of a fortress. Here Schliemann (q.v.) made his explorations, 1870–82, and found reasons for concluding that at Hissarlik are the ruins of 7 different successive 'cities' (more properly citadels) superimposed one upon another. Deepest beneath the vast mass of rubbish and ruins are traces of a small town on the hill, of absolutely unknown date. The next above it is greatly larger, the hill having simply been its citadel, and shows traces of grandeur. This city, also prehistoric, seems to have been overthrown by some great catastrophe about B.C. 12th c., certainly not later than B.C. 10th c.; and it is this that Dr. Schliemann ultimately (in his third volume, *Troja*) came to regard as identical with the Troy of Priam and of Homer's poetry. The last and highest of the series is the fifth historic one, the *Novum Ilium* above mentioned, which disappeared from history about the 4th or 5th c. after Christ. Schliemann uncovered several of the gates of the city (supposed Troy), the s. and w. wall, and two small buildings which he took to be remains of Priam's royal palace. Of most interest is the 'treasury' which he discovered near the s.w. gate. It contained copper utensils, beakers, cups, personal ornaments (chains, bracelets, diadems, rings) of gold and silver, which indicate a stage of culture answering to the period about B.C. 2000. These treasures are mostly deposited in the Berlin Museum of Ethnology. He exhumed also enormous quantities of prehistoric and other pottery, besides numerous weapons of bronze and stone. But Schliemann's identification of the second city at Hissarlik is not accepted by German scholars, and has not passed unscathed through the more recent criticism of scholars in general. Prof. R. C. Jebb, with the leading German archæologists, adduces strong reasons for believing that the 'lofty,' 'windy,' 'beetling' citadel of Homer's Troy can be assigned to no other site than to the hill of Bali-dagh, rising 400 ft. above the village of Bunarbashi.—See the several works of Schliemann, *Troja*, *Ilios*, etc. (above noted); Brentano's *Zur Lösung der troianischen Frage*; R. C. Jebb's *Schliemann's Ilios* (*Edinb. Rev.*, CCCIV.); W. J. Stillman's *Découvertes de Schliemann* (*L'Homme*, 1884, Oct.).

TROY, n. *troy*, or TROY-WEIGHT [said to be from *Troyes*, in France—a weight used at the fair of *Troyes*]: a standard of weight taking its name from the fair of *Troyes* (q.v.), town of France, and an important centre of commerce in the middle ages, where a similar weight was in use. A T. pound (of what value is unknown) is mentioned in Britain first in 1414, long before which time the standard pound of 12 oz., as well as another pound (the Tower pound) of 12 oz., was in use. The term 'Troy' was applied to the standard pound first in 1495, but no change seems to have been then made in its value; and it continued to be used exclusively by dealers in the precious metals, gems, and drugs: see POUND. The T. pound contains 12 oz., each ounce 20 pennyweights, and each pennyweight 24 grains (the grain being identical with the avoirdupois grain); thus the pound contains 5,760 grains, and is to the avoir. pound (which contains 7,000 grains) as 144 to 175; while the T. ounce is to the avoir. ounce (which contains 437½ grains) as 192 to 175. For medicines, other subdivisions of the T. pound were formerly employed; but now medicines are weighed by the Avoirdupois (q.v.) standard. T.-weight is now used chiefly by goldsmiths and jewellers.

TROYES, *trwâ:* town of France, formerly cap. of the province of Champagne, and now of the dept. of Aube; on the left bank of the Seine, 104 m. e.s.e. of Paris by railway. It is a very old-fashioned place, and most of the houses are of wood: some, of stone, dating from the 16th c., are of notably original and beautiful architecture. The principal buildings are the cathedral, dedicated to St. Peter, a splendid specimen of *flamboyant* Gothic, founded 872, and rebuilt between the 13th and 16th c.; the churches of St. Urban, the Madeleine, St. Pantaleon, and St. Remi, the Hôtel de Ville, a public library containing 100,000 vols. and 5,000 MSS., a museum, the Palace of Justice, the Exchange, Merchants' Hall, and various educational institutions. T. is not so populous or important as it was in the middle ages: even as late as Henry IV.'s time, its pop. was more than 60,000. It has extensive cotton and woolen manufactures; and, as the centre of a rich agricultural region, it has a large transit-trade. Cotton and woolen hosiery, woven mostly by hand, is very largely exported.—Pop. (1886) 46,972; (1891) 50,330.

T., anc. cap. of the Celtic Tricassii, was called by the Romans *Augustobona;* later, *Civitas Tricassium;* and then *Trecæ* (corruption of Tricassii), whence the modern T. Under the Counts of Champagne it rose in the 12th c. to great importance. Here the treaty uniting the French and English crowns was concluded 1420, May 21, between Henry V. of England, Charles VI. of France, and the Burgundian party. It was sealed soon afterward by Henry's marriage with Princess Catherine.

TROYON, *trwâ yŏng'*, CONSTANT: 1810, Aug. 25—1865, Feb. 21; b. Sèvres, France: painter. He spent his youth in the national porcelain-works; studied painting; began exhibiting 1833; and became eminent as a painter of landscapes and animals. His most noted works were landscapes of Sèvres, St. Cloud, and suburban Paris, and, among animal and figure pieces, *The Cattle Market*, *The Watering Place*, *Working Oxen*, *Hounds at Rest and in Motion*, *Before the Storm*, *Osier Bed*, *White Cow chased by a Dog*, and *Pastures near Trouville.*

TRUANT, a. *trô'ănt* [Bret. *truant*, a vagabond: Sp. *truhan*, a buffoon: F. *truand*, a vagrant: Cornish. *tru*, alas! W. *truan*, poor, miserable: Gael. *truagh*, wretched]: idle; lazy; wandering from business or duty; loitering: N. an idler; a scholar absent from school without permission; a loiterer: V. to idle at a distance from duty; to absent one's self from school without permission. TRU'ANTING, imp. TRU'ANTED, pp. TRUANCY, n. *trô'ăn-sĭ*, the act of playing truant; the state of being a truant. TO PLAY TRUANT, to be absent from school without leave.

TRUCE, n. *trôs* [It. *tregua;* F. *trêve*, formerly in the plu. *trêves*, a truce: Icel. *tryggr*, secure, trusty: Goth. *tryggva*, a covenant: comp. Gael. *truas*, pity (see TRUE)]: a temporary peace or suspension of hostilities agreed upon by contending forces or states, during which it is dishonorable to occupy more advanced ground, or to resort to any act which would confer advantage; but which may lawfully be broken before the prescribed period, on notice previously agreed on being given to the opposite party; this is called *denouncing a truce;* cessation; short quiet. **Truce'less**, a. *-lĕs*, without truce; merciless. **Truce-breaker**, one who violates an agreement or engagement. **Truce of God**, in the *Middle Ages*, cessation of warfare and feuds on certain days fixed by the church (see God's Truce). **Flag of Truce**: see under Flag 1.

TRUCK, v. *trŭk* [F. *troquer;* Sp. and Port. *trocar*, to swap, to barter: F. *troc;* Scot. *trock*, exchange, barter: F. *truc*, a blow, a smack with the lips]: to exchange; to barter or give in exchange: N. traffic by exchange of goods; hence, commodities exchanged in such traffic. **Truck'ing**, imp. **Trucked**, pp. *trŭkt.* **Truckage**, n. *trŭk'āj*, the practice of bartering goods. **Truck'er**, n. *-ėr*, one who trucks. **Truck system**, the system formerly pursued in the United Kingdom and elsewhere by the owners of factories, and other large works, and by coal-masters, of compelling their work-people to take goods in exchange for their labor—a system put down in Great Britain by act of parliament 1831, though still covertly followed in many places. This thoroughly unjust and demoralizing system (or a system involving the same principle under some thin disguise), though never extensive in the United States, has been pursued by some large mining companies, and is still in use in a few districts; but is contrary to the laws in most of the states. In regions remote from a settled population, great companies (mining, etc.) may find a temporary necessity for keeping in store certain articles for sustenance of their workmen who may wish to buy from them; but this plan should be—(1) pursued no longer than is necessary; (2) administered on no scheme of profit to a powerful company from the necessities of helpless men.

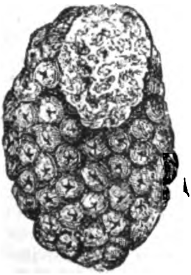
TRUCK, n. *trŭk* [L *trochus;* Gr. *trochos*, a hoop—from *trechein*, to run]: a small wooden wheel; a sort of platform running upon wheels or trucks; a small solid wheel for ordnance; a cylinder; the round disk at the top of a mast; a small hand-carriage with two very small wheels near one end for the removal of sacks, etc.; an open railway wagon for the conveyance of goods; a group of two or more pairs of wheels in one frame, used for supporting one end of a railway-car, a locomotive, or the like; a bogie; a kind of dray: V. in *rail.*, to convey by truck. **Truck'age**, n. *-āg*, the cost of transporting or moving goods by trucks.

TRUCKLE, n. *trŭk'l* [dim. from Truck 2]: a small wheel or caster; a truckle-bed: V. to roll or cause to roll; to roll on a wheel or something round; to lie or pass under something else; hence, to yield or bend obsequiously to the will of another; to submit servilely. **Truck'ling**, imp. *-lĭng:* Adj. meanly obedient; cringing; servile: N. servile submission to the will of another. **Truckle-bed**, a bed that can be rolled in under another and drawn out when wanted for use, also called *trundle-bed.*

TRUCULENT, a. *trô'kŭ-lĕnt* or *trŭk'ū-lĕnt* [L. *truculentus*, very savage, fierce—from *trux* or *trucem*, fierce: It. *truculento*]: savage; of fierce aspect; destructive; cruel. **TRU'CULENCE**, n. *-lĕns*, or **TRU'CULENCY**, n. *-lĕn-sĭ*, savageness of manners; ferociousness of aspect. **TRU'CULENTLY**, ad. *-lĭ*.

TRUDGE, v. *trŭj* [Gael. *troidh*, the foot, the sole of the foot: W. *troed*, a foot: a variant of **TREAD**: comp. It. *truccare*, to trudge, to scud, to pack away nimbly]: to go steadily along: to jog or march heavily on; to travel or walk with labor and effort. **TRUDG'ING**, imp. **TRUDGED**, pp *trŭjd*.

TRUE, a. *trô* [Icel. *trur*, sure, trusty: Dan. *tro*, true: Goth. *trauan;* Ger. *trauen*, to believe, to confide in]: in accordance with that which actually exists, or is done or said; conformable to fact or the actual state of things; not false or counterfeit; not perfidious; not fraudulent; conformable to rule; genuine; faithful; honest; right, free from falsehood. **TRUE'NESS**, n. *-nĕs*, sincerity; faithfulness; truth; exactness; accuracy. **TRULY**, ad. *trô'lĭ*, in reality; according to truth. **TRU'ISM**, n. *-ĭzm*, that which is self-evident: something trite. **TRUE BILL**, the formula by which the grand jury finds or approves a bill of indictment. **TRUE-BLUE**, a. inflexibly honest or faithful. **TRUE-BORN**, a. of genuine birth. **TRUE-BRED**, a. of a genuine or right breed. **TRUE-HEARTED**, a. sincere; not faithless or deceitful. **TRUE-HEARTEDNESS**, n. state of being sincere and faithful, honesty; sincerity. **TRUE-LOVE**, n. one really beloved. **TRUE-LOVER'S-KNOT**, or **TRUE-LOVE-KNOT**, n. a line or band knotted with many folds, a supposed emblem of the interwoven affections. **TRUE-PENNY**, n. in *OE.*, an honest fellow.—SYN. of 'true': real; genuine; veracious; steady; honest; constant; loyal; exact; rightful; actual; positive; veritable; certain.



Truffle (*Tuber cibarium*).

TRUFFLE, n. *trŭf'fl* [OF. *trufle;* F. *truffe;* Sp. *trufa;* It. *tartufo*, a truffle—from L. *tuber*, a swelling, a truffle: OF. *trufle* means also mockery, raillery, from which sense of the word comes Eng. *trifle*]: fleshy fungus of the genus *Tuber* and section *Gasteromycetes*, of roundish shape, found buried at the depth of several inches in the clayey sandy soils of s. England, in France, in Italy, etc.—much esteemed as a luxury. **TRUFFLED**, a. *trŭf'fld*, cooked or stuffed with truffles.—The Common *Truffle* (*T. cibarium*) is of black color and has a warty surface. It varies in size from that of a large plum to that of a large potato. On account of its agreeable flavor, it is used in preparation of many dishes. It is common in central and s. Europe, chiefly in loose soils, in woods and pastures, as in the chestnut woods of France and Italy. In England it occurs in the downs of Wiltshire, Hampshire, and Kent. Other species, as *T. æstivum*, *T. rufum*, and *T. moschatum*, are found in parts of France, Italy, and other countries of Europe, and are sought after and used in the same manner as the Common Truffle. The Eng. species are more numerous and abundant than was formerly supposed. France has 3 varieties, and the annual production is valued at about $3,000,000. Dogs and pigs are trained to seek truffles, and readily discover by the scent the spot where they grow underground. The stirring of the soil in the gathering of truffles seems to increase its productiveness. In Germany the name BLACK T. is given to the Common T.; and that of WHITE T. to *Rhizophagon album*, species of a nearly allied genus, found also in England: it grows half above-ground, is of whitish-red color, and generally of the size of a large walnut. It is less aromatic than the Common T., but is used in the same way. Much attention has been given recently to gathering and preserving the T. in the United States, especially in California.

TRUISM, n.: see under TRUE.

TRUJIL'LO: see TRUXILLO.

T-RULE: see T-SQUARE.

TRULL, n. *trŭl* [Ger. *trolle*, a coarse sluttish woman: Swiss, *trolle;* Swab. *trull*, a thick fat woman: Scot. *troll*, to work or walk in a slovenly manner]: a sorry wench; a vile strumpet; a vagrant strumpet.

TRULLAN, *trŭl'an:* an epithet sometimes applied to the ecclesiastical council, which is otherwise called the Quinisext (q. v.), from *Trullus* [Gr. *troullos*], the hall of the palace at Constantinople in which the Fathers assembled.

TRULLIZATION, n. *trŭl'li-zā'shŭn* [L. *trullissārĕ*, to trowel, to plaster—from *trulla*, a trowel (see TROWEL)]: the laying of layers of plaster with a trowel.

TRULY, ad.: see under TRUE.

TRUMBULL, *trŭm'bŭl*, BENJAMIN, D.D.: Congregational minister and author: 1735, Dec. 19—1820, Feb. 2; b. Hebron, Conn. He graduated at Yale 1759, and then was pastor of a chh. at New Haven 1760 till his death. In the revolutionary war he was chaplain and volunteer soldier. He wrote: *Vindication of the Conn. Title to the Contested* (western) *Lands; Complete Hist. of Conn.;* and Vol. I. of a *Gen. Hist. of the United States.*

TRUM'BULL, HENRY CLAY, D.D.: Congregational minister and author: b. Stonington, Conn., 1830, June 8. He was educated at Williston Sem., Easthampton, Mass.; was ordained to the ministry 1861, and was chaplain of a Conn. regt. during the civil war. He was missionary sec. for New England of the Amer. S. S. Union 1865–71, then gen. sec. till 1875, when he became ed. of the *Sunday School Times* in Philadelphia. Visiting Palestine 1881, he discovered the site of Kadesh Barnea, and published the results of his researches in a vol. 1884. He is author of several other books.

TRUM'BULL, JAMES HAMMOND, LL.D.: philologist and historian: b. Stonington, Conn., 1821, Dec. 20. Having studied at Yale, he assisted the Rev. J. H. Linsley in cataloguing mammalia, reptiles, fishes, and shells of Conn., 1842–3; was asst. sec. of state of Conn. 1847–52, and sec. of state 1861–65. He is learned in the aboriginal languages of N. America, and has published several vols. on the subject. Besides his philological writings, which are an authority on their special subject, he is author of works on the *Colonial Records of Conn.; Origin of McFingal; Constitutions of Connecticut.*

TRUM'BULL, JOHN: painter: 1756, June 6—1843, Nov. 10; son of Gov. Jonathan T. ('Brother Jonathan') of Conn., and bro. of Gen. Jonathan T., aide-de-camp to Gen. Washington; b. Lebanon, Conn. He was educated at Harvard, and applied himself to painting. He had completed two pictures, the *Battle of Cannæ* and the *Judgment of Brutus*, at 19, when the war of the revolution broke out, and he joined the provincial army before Boston as adjutant of the 1st Conn. regt. The execution of drawings of the British works procured his appointment as aide to Washington, and soon afterward that of brigade-major. In 1776–7 he served under Gates and Arnold as adjt. gen.; but, offended with the action of congress respecting the date of his commission, he resigned, and resumed the palette. In 1780 T. went to London *viâ* France, where he was making rapid progress under the instructions of Sir Benjamin West, when, during the excitement occasioned by the execution of Major André, he was thrown into prison. The king, George III., promised West that his life should be spared; but he was kept eight months in prison, and then released on condition of leaving the kingdom. After the war he returned, and resumed his studies. His *Priam receiving the Body of Hector*, painted at this period, is in the gallery of the Boston Athenæum. In 1786 he produced the first of a series of modern historical and military works, the *Battle of Bunker Hill*, followed by the *Death of Montgomery*, and *Sortie of the Garrison from Gibraltar*, exhibited in London 1789, and engraved by Sharp. In 1789 he returned to the United States, painted several portraits of Washington, and secured likenesses of many prominent actors in the revolution; and 1796 returned to England as sec. of legation to John Jay. He was in England 1808–15, painting industriously. Returning to America, he was employed by congress to paint four large national pictures for the rotunda of the capitol at Washington—the *Declaration of Independence, Surrender of Burgoyne, Surrender of Cornwallis* and the *Resignation of General Washington, at Annapolis, December* 23, 1783. These pictures are valuable chiefly as collections of portraits. He afterward completed a gallery of all his historical pictures, 57 in number, on a smaller scale, which became the property of Yale Univ., and has great historical value. He was pres. of the Amer. Acad. of Fine Arts from its foundation 1816 until the formation of the National Acad. 1825; and died in New York.

TRUM'BULL, JOHN, LL.D.: author, and one of the Amer. poets of the 18th c.: 1750, Apr. 24—1831, May 10; b. Westbury (now Watertown), Conn. He graduated at Yale 1767; wrote some essays in the style of Addison's *Spectator* (1769); *Progress of Dullness*, a satire on educational methods (1772); studied law, and began practice in New Haven 1774. The first canto of his *McFingal*, a satire in the Hudibrastic vein, was pub. 1775, and the 4th and last 1782 (the whole repub. New York 1881). He wrote several political essays, and was a member of the Conn. legislature 1792 and 1800, judge of the Conn. superior court 1808–19. He settled in Detroit, Mich., 1825.

TRUM'BULL, JONATHAN: governor of Conn.: 1740, Mar. 26—1809, Aug. 7; b. Lebanon, Conn.; son of JONATHAN T. He graduated at Harvard 1759; was member of the legislature and speaker; paymaster in the army 1775–78; then sec. and aide to Gen. Washington till the end of the war; member of congress 1789–95 (speaker 1791–95); U. S. senator 1795–6; lieut.gov. of Conn. 1796–98; then gov. till his death.

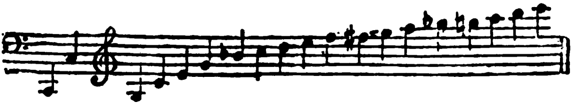
TRUM'BULL, JONATHAN, LL.D.: governor of Conn.: 1710, June 10—1785, Aug. 17; b. Lebanon, Conn. He graduated at Harvard 1727; after studying theol. was licensed to preach; but turned to mercantile business and then to the law. He was elected to the legislature 1733; was speaker of the assembly 1739; then held judicial office for some years; was chosen lieut.gov. 1766, gov. 1769, holding office till 1783. He was a fast friend of George Washington, who greatly valued his counsel and used to refer to the gov. of Conn. as 'Brother Jonathan'—hence, probably, the popular epithet for the U. S. govt. and people. When Washington, 1776, Aug., wrote to T. of the urgent need of reinforcements for the army, T. issued a call to the people of Conn. which had almost instant response in the forming of 9 regts. of 350 men each, though already 5 regts. from Conn. were in the field. In the call to arms was this characteristic sentence: 'Join yourselves to one of the companies now ordered to New York, or form yourselves into distinct companies and choose captains forthwith. March on; this shall be your warrant. May the God of the armies of Israel be your leader.' See *Life* by Isaac W. Stuart.

TRUMP, v. *trŭmp* [It. *trombare*, to make a rattling noise; *strombare*, to blurt with one's mouth: F. *tromper*—*lit.*, to blow the trumpet to one, hence, to deceive (see TRUMPET)]: in *OE.*, to lie; to boast; to deceive; to impose upon; to play a trick upon. TRUMP'ING, imp. TRUMPED, pp. *trŭmpt.* TRUMPERY, n. *trŭmp'ėr-ĭ*, something of less value than it seems; falsehood; trifles; empty talk; things of no value: ADJ. trifling; worthless; not able to bear investigation. To TRUMP UP, as a story, to get up a fraudulent story; to devise; to seek and collect apparent evidence unscrupulously, from every quarter.

TRUMP, n. *trŭmp:* in *Scrip.* and *poetry*, a trumpet.

TRUMP, n. *trŭmp* [F. *triomphe;* Ger. *trumpf*, trump: same word as *triumph*, from L. *triumphus*, a triumph]: the suit of cards in a game any one of which for the time being outranks and takes any card of the other suits; the winning card; an old game at cards; in *slang*, a good fellow upon whom one can always depend to do the right thing on an emergency: V. to play a winning card on another in order to win; to take with a winning card. **Trump'ing**, imp. **Trumped**, pp. *trŭmpt*.

TRUMPET, n. *trŭm'pĕt* [F. *trompe* or *trompette;* Sp. and Port. *trompa;* It. *tromba*, a trumpet: OHG. *trumba*, a drum: L. *tuba*, a trumpet with a straight tube]: a wind instr. of great antiquity, in its present form consisting of a tube of considerable length, doubled up in the form of a parabola, and terminating in a bell-like aperture: V. to publish by sound of trumpet; to proclaim. **Trum'peting**, imp. **Trum'peted**, pp. **Trum'peter**, n. *-ĕr*, one who or that which trumpets; a soldier who blows a trumpet; to give a signal or pass an order; one who proclaims or publishes; a kind of pigeon. **Trum'petry**, n. *-rĭ*, the sound or blowing of trumpets. **Trumpet-call**, a military order sounded through a trumpet. **Trumpet-fish**, a fish so called from its tubular muzzle. **Trumpet-flower**, a name applied to more than one species of plants of the ord. *Bignonĭăcĕæ*, whose flowers are trumpet-shaped; a species of honeysuckle. **Trumpet-shell**, a univalvular shell of a trumpet-shape. **Trumpet-tongued**, a. having a tongue loud and piercing as a trumpet. **Speaking-trumpet**, a trumpet for increasing the intensity of speech, and transmitting it to a considerable distance. **Hearing** or **Ear trumpet**, a long tube, generally made curved or spiral, with a trumpet-shaped end, for collecting sounds into a focus, used by persons with imperfect hearing, to enable them to hear words and sounds more distinctly.—The *Trumpet* produces the following progression of sounds:



Music for the T., as for the Horn (q.v.), is written in the key of C, the key to which the instrument is to be adapted being pointed out by the composer. The pitch is an octave higher than that of the horn. Trumpets in the keys of C, D, and E♭ are most used; but there are trumpets also in A, B♭, E, F, and G. To enable the T. to give a complete series of semitones, finger-keys and sliding tubes have been introduced by some makers, rather to the detriment of the freshness and fulness of tone of the instrument.

TRUMPET-FISH, or **SNIPE'-FISH**, or **BEL'LOWS-FISH.** fish of the genus *Centriscus*, family *Centriscidæ*, remarkable for the elongated and tubular snout, at the end of which the mouth is situated; and for a very long spine in front of the dorsal fin. The species (*C. scolopax*), rare on Brit. coasts, abundant in the Mediterranean, attains a length of about five inches, the snout projecting about an inch and a half in front of the eyes. The mouth is destitute of teeth. This little fish is esteemed a delicacy, and is often seen in the markets of Italy.—On the N. Amer. Atlantic coast the name T.-F. is given to *Fistularia tabacaria*, of family *Fistulariidæ*—a fish similar in appearance, but having a tail with two long filaments. Another name is Pipe-fish.

TRUMPET-FLOWER: popular name of flowering shrubs of genera *Bignonia* and *Tecoma*, both of the nat. order *Bignoniaceæ* (q.v.). *Bignonia capreolata* is native of the s. states, but often planted in shrubberies and gardens in the middle states. It is a climbing shrub with conjugate leaves and heart-shaped oblong leaflets. The flowers are reddish yellow, with long tubular corolla, from whose form the Eng. name is derived.—*Tecoma radicans* (formerly *Bignonia radicans*) is a woody vine, native of the s. states, reaching to a more n. latitude than the last. It has much larger flowers, of yellowish-scarlet color. The leaves are pinnate, leaflets ovate and toothed.—*T. grandiflora* is a native of Japan, with pinnate leaves and flowers much larger than *T. radicans*.

TRUNCATE, a. *trŭng'kāt* [L. *truncātus*, pp. of *truncārĕ*, to maim, to cut off—from *truncus*, a trunk: It. *troncare;* F. *tronquer*, to lop off]: terminating abruptly as if cut off at the end: V. to cut off; to lop; to maim. **TRUN'CATING**, imp. **TRUN'CATED**, pp. a. cut short; in *geom.*, applied to a pyramid or cone, the top or vertex of which is cut off by a plane parallel to its base. **TRUNCATION**, n. *trŭng-kā'shŭn*, state of being truncated; the change in the geometrical form of a crystal, produced by the cutting off of an angle or edge so as to leave a face more or less large instead of the edge or angle. **TRUNCUS**, n. *trŭng'kŭs*, in *bot.*, the trunk or bole of a tree.

TRUNCHEON, n. *trŭn'shŭn* [F. *tronçon*, a piece cut or broken off, as from a lance or sword—from L. *truncus*, stock or trunk of a tree]: a short staff; a cudgel; a baton; a military staff of command: V. to beat with a cudgel. **TRUN'CHEONING**, imp. **TRUN'CHEONED**, pp. *-shŭnd:* ADJ. furnished with a truncheon. **TRUN'CHEONEER'**, n. *-shŭn-ēr'*, or **TRUN'CHEONER**, n. *-shŭn-ėr*, a person armed with a truncheon.

TRUNDLE, v. *trŭn'dl* [AS. *trendel*, an orb, a circle: Fris. *trund*, round: Sw. and Dan. *trind*, round: from same root as *trend*]: to roll along; to roll, as on little wheels; to roll along, as a hoop: N. a round rolling body; a little wheel; a low cart with small wooden wheels—now called a *truck*. TRUN'DLING, imp. *-dling*. TRUNDLED, pp. *trŭn'dld*. TRUNDLE-BED, same as TRUCKLE-BED, which see under TRUCKLE. TRUNDLE-HEAD, the wheel that turns a millstone. TRUNDLE-TAIL, a round tail of a dog; a dog having such a tail.

TRUNK, n. *trŭngk* [F. *tronc*, a trunk, headless body, alms-box—from L. *truncus*, the stock or body of a tree without the boughs: Ger. *strunk*, a stump, a trunk]: the stem or body of a tree apart from its branches; the main body of anything; a box or chest, particularly one covered with leather, skin, or the like; the proboscis of an elephant; the part of the body between the head and the abdomen; a large pipe through the cylinder of a steam-engine; a water-course made of planks. TRUNKS, n. plu. *trŭngkz*, trunk-hose. TRUNKED, a. *trŭngkt*, having a trunk. TRUNK-HOSE, that part of hose which covered the trunk or body; hence a garment covering the body from the waist to the middle of the thigh, and shaped like a bag through which the legs are thrust. TRUNK-LINE, the main line of a railway, as distinguished from the branch lines or feeders. ELEPHANT'S TRUNK, the proboscis of the elephant, perhaps a corruption of *trump*, in allusion to its long trumpet-like form.

TRUNK'-FISH: see OSTRACION—OSTRACIONIDÆ.

TRUNNION, n. *trŭn'yŭn* [F. *trognon*, the stalk of a cabbage: It. *troncone*, the trunk or body of a tree—from L. *truncus*, a trunk]: one of the two knobs which project from the opposite sides of a cannon, and which serve to support it on the cheeks of the carriage (see GUN).

TRURO, *trū'rō:* town, county seat of Colchester co., Nova Scotia; near the head of Cobequid Bay; on the Intercolonial railroad, at its junction with the Pictou branch; 61 m. n.n.e. of Halifax. Besides several handsome churches, its public buildings are the court-house, a provincial normal school, and the model school buildings. T. manufactures engines, machinery, iron-castings, woolens, leather, wooden-ware, boots and shoes, hats, lasts, and pegs. Mining, ship-building, and fishing are carried on in its vicinity.—Pop. (1881) 3,461; (1891) 5,102.

TRU'RO: city, municipal borough, and seaport of Cornwall, England, of which county it is considered the metropolis, though Bodmin (q.v.) is the county town; about 10 m. n.n.e. of Falmouth, 300 m. by railway s.w. of London; at the junction of the Allen and the Kenwyn, here met by an inlet of the sea called T. river, whose banks present some beautiful scenery, and which admits vessels of 70 tons to the quays of the town. T. is one of the oldest towns in England. It is the centre of a mining district, and largely exports tin and copper ore. St. Mary's Church, an interesting Perpendicular Gothic edifice of the

16th c., has in part been incorporated with the new Cathedral of St. Mary (1880), which forms one of the most important of modern Eng. ecclesiastical buildings. The bishopric of T. was constituted 1876.—Pop. (1891) 11,131.

TRUSS, n. *trŭs* [F. *trousser*, to pluck up; *trousse*, a truss, a bundle: OF. *trosser*, *torser*, to pack up—from a supposed mid. L. *tortĭārĕ*, to twist together—from L. *tortus*, pp. of *torquērĕ*, to twist: O.Sp. *trossa;* Sp. *torca*, a truss of hay: W. *torchi*, to twist, to wreathe]: a quantity, about 56 lbs., as of hay or straw, tied together; a small hand-packed bundle of dry-goods: in *building*, a combination of timbers or of iron parts, or both, so arranged and fastened together as to form a stiff unyielding frame; in *surg.*, a bandage or apparatus used in cases of hernia to keep up the reduced parts, and to prevent further protrusion (see below): among *seamen*, the rope used to keep the centre of a yard to the mast, now replaced by a heavy iron fitting; in *arch.* (see CONSOLE): V. to bind or pack close; to skewer, as poultry, etc.; to make fast; to hang. TRUS'SING, imp.: N. the act of packing or binding closely; the collection of timbers which bind and support a roof or a beam. TRUSSED, pp. *trŭst*. To TRUSS UP, to make close or tight; to hang.

TRUSS: instrument employed in the palliative treatment of Hernia (q.v.), with the view of preventing its descent, and, in some cases, of effecting a permanent cure. It consists essentially of a pad or cushion attached to a metallic spring, with straps so arranged that its position may be retained during the varied postures of the body. The necessity of having recourse to a suitable T. the moment that the slightest protrusion shows itself in any of the parts liable to hernia cannot be too strongly urged. At whatever period of life a hernia occurs, if properly attended to, and judiciously supported, it usually gives little trouble, and in early life it may often be cured; whereas, if neglected, increase of bulk, and, subsequently, diseased states of the parts, often terminating in death, will almost certainly occur. A surgeon should always be consulted in the choice of the instrument. There are occasional cases in which the common T. fails to support a rupture comfortably; in these cases various instruments, usually the property of special instrument-makers, are often serviceable; and the surgeon should be acquainted with the peculiarities of the pieces of apparatus known as the Mocmain Lever T., Coles's T. (with a spiral spring acting on the pad), Salmon and Ody's Self-adjusting T., Eggs's T., and several others. The patient must expect to find the T. somewhat uncomfortable for a week or two, but will soon become used to it. The skin of the part on which it presses should be regularly washed and bathed with Eau de Cologne or spirit, to prevent formation of boils on it.

TRUST, n. *trŭst* [Icel. *traustr*, trusty: Norw. *traust*, firm, steady: Dan. and Sw. *tröst*, consolation: Goth, *triggws*, faithful; *trausti*, a covenant: Ger. *trost*, help, protection (see TRUE)]: a resting of the mind on the integrity, justice, or friendship of another; reliance; confidence; the person or thing that is the ground of confidence; credit given without examination, or without security of any kind; that which has been given or received in confidence; something committed to charge of which an account must be given; confidence in supposed honesty; credit given on a promise of payment; in *law*, a confidence reposed in a person by making him the nominal owner of property which he is to hold or use for the benefit of another, or the estate so held (see below): V. to rely on; to believe; to credit; to venture confidently; to commit to the care of in confidence; to hope, as 'I *trust* he will do well'; to be confident of something future; to sell to upon credit; to confide or have confidence in; to be won to confidence. **TRUST'ING**, imp.: ADJ. confiding. **TRUST'ED**, pp. **TRUST'ER**, n. *-ér*, one who trusts. **TRUST'INGLY**, ad. *-lĭ*. **TRUSTEE**, n. *trŭs tē′*. person who holds an estate or property of any kind for the benefit and use of another (see TRUST, below). **TRUSTEE'SHIP**, n. *-shĭp*, the office of a trustee. **TRUSTEE-PROCESS**, term, in some New England states, for GARNISHMENT (see GARNISH, etc.). **TRUST'FUL**, a. *-fûl*, full of trust; worthy of trust; faithful. **TRUST'FULLY**, ad. *-lĭ*. **TRUST'FULNESS**, n. quality of being trustful. **TRUST'LESS**, ad. not worthy of trust. **TRUST'LESSNESS**, n. *-nĕs*, the state or quality of being trustless. **TRUSTY**, a. *trŭs′tĭ*, that may be safely confided in or trusted; honest; faithful; that will not fail; firm; strong. **TRUST'ILY**, ad. *-lĭ*. **TRUST'INESS**, n. *-nĕs*, the quality of being trusty; fidelity; honesty **TRUST'WORTHY** a. worthy of trust or confidence; faithful; honest. **TRUST'WORTHINESS**, the state or quality of being trustworthy. To **TRUST IN**, to place confidence in; to rely on. To **TRUST TO**, to depend on; to rely on. **TRUST-DEED**, a deed creating a trust; specifically, in *Scots law*, legal document in which the property of another is conveyed or made over to a person or persons called *trustees* for a specific object, e g., payment of the debts of the truster. **TRUST ESTATE**, the property conveyed by trust-deed.—SYN. of 'trust, n.': faith; hope; dependence; reliance; belief; expectation; credit; deposit.

TRUST, in LAW: a right of property, real or personal, confided to one person (*trustee*), to be by him held for the benefit of another person (*Cestui que trust*—q.v.—or *beneficiary*). The enforcement of the terms of a T., as also the providing a new trustee instead of one deceased or refusing to accept the T., are matters for a court of chancery or similar court. A T. means a species of divided proprietorship, whereby the trustee acts as a custodier or strong-box; and yet the benefit of the property is not his, but belongs to the *cestui que trust*. The person who creates the trust is called sometimes the *celui que trust*. As a general rule, all property, real or personal, may be made the subject of a T., provided some policy of the law or statute does not prevent it. Trusts are most frequently created by a will; but they may be declared by word of mouth as regards personalty; while as to land, some writing is necessary. No particular words are necessary, but the intention of the party making the T. must be clear. Thus, in wills, a testator sometimes uses words which do not amount to an express T., but speaks of his 'wish and desire,' or his 'confidence,' that the executor or trustee shall do certain things. These words are called in the law precatory trusts, but are enforced in the same way as those in more direct language, if no uncertainty exists as to the purposes or mode of carrying out the T. But if a testator merely recommends an executor to 'consider certain persons,' 'to be kind to them,' or 'to do justice to them,' or 'to make ample provision for them,' etc.—such expressions are treated as too vague to be binding; therefore the executor may disregard them, or use his own discretion. A trustee's office is not compulsory, but gratuitous; therefore he need not accept the office unless he pleases. But if he once accept, he is not at liberty afterward to renounce, unless the T.-deed contain a provision enabling him to do so, or the court of chancery for good reasons discharge him. A trustee cannot delegate the office to a third person, but continues personally bound to do his duty. Where there are several trustees appointed, the office is considered joint, so that, if one dies, the survivors continue to exercise the office. As a general rule, all must join in doing any act: but if the T. is of a public nature, a majority may bind the minority. Each trustee is liable only for his own acts or defaults; and this is so even though, for form's sake, he join his co-trustees in signing a receipt, if he can show that he never received the money in point of fact. Nevertheless, when money lies in the hands of one trustee, the others ought not to be satisfied with his mere statement that the money has been invested by him, but should see that the investment has been or is actually made. Another rule is, that a trustee is not allowed to make a gain of his office; and so jealous is an English court of this rule, that the trustees of a large estate are not allowed even to sport over the estate—at least so as thereby to keep any valuable right of that kind for their own pleasure. Hence, a trustee is personally liable if he trade with the T. funds, or buy shares in a joint-stock bank; for even though the T.-deed authorize this to be done, he will be liable to pay the debts of the trading concern, though far exceeding the amount of the trust funds. The duty of a trustee, expressed in general terms, is 'to protect and preserve the T. property, and to see that it is employed solely for the benefit' of the beneficiary. The quality and the duration of the estate of a trustee are to be determined by the purpose and exigency of the T.; hence, if the instrument creating the T. declares that the estate goes to the trustee and his heirs, the term of the T. may be shortened if thereby the purposes of the creation of the T. are attained. A trustee can be sued for any breach of T., and must make good out of his own estate losses caused to the T. estate by his negligence. Not only must he account for the principal and income of the T. property—he is even liable for a sum equal to that which he might have received through good management: thus, he is liable for legal interest on T. moneys which h needlessly suffers to lie unused.

TRUSTS, in modern commercial usage, are organizations of two or more distinct corporations, which transfer the control of their several affairs to a board of *trustees*. To the trustees is transferred at least a major part of the stock of each of the several corporations, and the stockholders of the corporations in return receive from the trustees certificates which entitle them to *pro rata* shares in the profits or dividends of the *Trust*. By this device the trustees are empowered to elect directors of the several corporations, and to conduct the work of all the establishments in such manner as may seem best to serve the interest of the T. The courts of New York have decided that corporations operating under charters granted by the legislature of that state cannot lawfully form trusts and delegate to trustees the functions imposed on themselves. Further, the courts have declared the charters and franchises of the sugar-refining corporations forfeited by the very act of forming a T. The question has not been determined in any other state by the court of last resort.—The name T. is improperly applied to a combination of firms or individuals, engaged in the same line of business, for regulating of prices.

A CHARITABLE TRUST differs from private trusts in that its beneficiaries are not defined; hence here the beneficiary (hardly to be called in this case *cestui que trust*) has no action at law against the trustees. The conduct of a charitable trust is properly subjected to supervision by the officers of the law, on behalf of the beneficiaries. In the United States the law of charitable trusts differs widely in the several states. In some of them a charitable trust can be made effective only through a corporation. The lawful objects of a charitable T. are relief of the poor and distressed; founding schools, colleges, etc., and adding to their resources after they have been founded; founding churches, hospitals, asylums, dispensaries, etc. When the purpose of the T. is best forwarded by selling specified property and investing the proceeds, a court of equity may direct such course to be taken.

TRUTH, n. *trôth* [see TRUE]: conformity to fact or reality; freedom from falsehood; fidelity; constancy; sincerity; honesty; virtue; that which is true; a fixed principle or proposition: V. in *OE.*, to affirm as true. TRUTH'FUL, a. *-fûl*, habitually disposed to speak truth; closely adhering to truth. TRUTH'FULLY, ad. *-lĭ*. TRUTH'FULNESS, n. *-nĕs*, the state of being truthful. TRUTH'LESS, a. *-lĕs*, wanting in truth. TRUTH'LESSNESS, n. *-nĕs*, the state of being truthless. IN TRUTH, in reality; in fact. OF A TRUTH, in reality; certainly. FIRST TRUTHS, intuitive matters of belief. TRUTH-SPEAKING, a. uttering truth.

TRUXILLO, *trô-chĕl'yō:* port of the republic of Honduras, dept. of Yoro; on the w. shore of the Bay of T.; lat. 15° 55′ n., long. 86° w. T. was founded 1524, and was for many years a flourishing place. It was the seat of a bp. 1539-61. Exports, timber, metals, and hides.—Pop. about 4,000.

TRUXIL'LO: town of Peru, cap. of the prov. of Libertad; near sea-coast, about 300 m. n.n.w. of Callao. The port of T. is Huanchaco, about 8 or 9 m. n.w., from which considerable quantities of rice and spices are exported. T. was founded 1535 by Pizarro, who named it after his birthplace in Spain. It is the seat of a bishop; has a so-called univ. and an episcopal seminary.—Pop. (1889) abt. 11,000.

TRUXIL'LO: town of Venezuela, cap. of the dept. and state of T.; about 187 m. s.e. of Maracaibo. Pop. 2,648.—Pop. of dept. 27,819; of state 108,672.

TRUXIL'LO, or **TRUJIL'LO**: town of Spain, prov. of Cáceres; on the great highway from Madrid to Badajoz; birthplace and burial-place of Pizarro (q.v.). The people are engaged in weaving, tanning, pottery-making, etc.; and there is profitable trade in cattle. T. has five churches, eight convents, four hospitals, and several palaces.—Pop. (1887) 9,430.

TRUXTUN, *trŭks'tŭn*, **THOMAS**: naval officer: 1755, Feb. 15—1822, May 5; b. on Long Island, N. Y. He became a sea-farer at the age of 12. At the outbreak of the revolutionary war he became lieut. on board the *Congress*, privateer; later, as commander of other privateers, he performed many brilliant feats and took as prizes many British vessels. Commanding the U. S. frigate *Constellation*, 38 guns, he captured the French frigate *L'Insurgente*, 40, off Hen's Island, W. Indies, the loss of the French being 29 killed, 44 wounded; T.'s loss, 1 killed, 2 wounded (1799, Feb. 8). In an action with the French frigate *La Vengeance*, 54 guns, off Guadeloupe, T.'s vessel lost 14 killed, 25 wounded; the French loss was 50 killed, 110 wounded. *La Vengeance* surrendered, but escaped actual capture, the vessels being separated by a squall (1800, Jan.). T. was appointed to command a squadron destined for Tripoli 1802; but his request for a capt. to command the flagship having been denied, he wrote to the sec. of the navy a letter which was construed as a tender of resignation, and T. was obliged to quit the service.—T. wrote *Remarks, Instructions, and Examples relating to Latitude and Longitude* (1794).

TRY, v. *trī* [F. *trier*, to pick, to select: It. *tritare*, to grind, to sort or sift—from mid. L. *tritārĕ*, to triturate—from L. *tritus*, pp. of *tererĕ*, to bruise, to grind: Piedm. *trié*, to grind or wear down]: to attempt; to endeavor; to make or use exertion in order to perform; to make experiment on; to use means; to prove by experiment; to act as a test; to bring to a test; to examine; to bring before a tribunal or into a court of law; to examine judicially by witnesses; to strain, as one's eyes; to purify or refine: N. an attempt; an experiment. **TRY'ING**, imp.: **ADJ.** acting as a test, as to one's patience or principles; severe: N. a testing. **Tried**, pp. *trīd:* Adj. examined by test. **Trier**, **Triable**, **Trial**: see these titles in alphabetical order. To **try back**, to return on one's track, to gain something lost. To **try on**, to fit on an article of dress; *familiarly*, to attempt, usually in phrase. 'to *try* it *on*.' **Try-sail**, among *seamen*, a fore-and-aft sail set with a gaff, and with or without a boom, on the lower masts of square-rigged vessels. It is similar to the spencer of brigs or schooners, and to the spanker or driver of ships; and is hoisted on the main or fore mast as an extra sail, to take advantage of a favorable breeze. Sometimes a special mast, called a *try-sail mast*, is erected immediately abaft the mainmast, to hoist it upon. A try-sail is also used without the boom, especially by small vessels, instead of their mainsail during foul weather: in this case it is called a *storm try-sail*. **Trying-house**, the place where whale's blubber is reduced to oil and refined.—Syn. of 'try, v.': to strive; aim; assay.

TRY'GON: see Sting Ray.

TRYMA, n. *trī'mă* [Gr. *trūma*, a hole, an opening]: in *bot.*, a fruit resembling a drupe, as the walnut, having a coriaceous or fleshy epicarp and mesocarp, one-celled and one-seeded; a two-valved bony endocarp, having partitions on the inner concave surface, as the walnut.

TRYON, *trī'on*, William, ll.b.: about 1725-1788, Feb. 27; b. Ireland: milit. officer. He served in the Brit. army in early life; was lieut.gov. of N. C. 1764–5, and gov. 1765–71, and gov. of N. Y. 1771–78, at the period of the outbreak of the revolution. He returned to England 1778; was promoted col. 1772, maj.gen. 1777, and lieut.gen. 1788. He received his degree from King's College, New York, 1774. His administrations were noted for the extreme cruelty with which he treated the colonial patriots, and for the wanton destruction of Danbury, Fairfield, and Norwalk, Conn., by personally conducted expeditions from New York.

TRYST, n. *trist* or *trīst* [a variant of Trust, which see]: an appointment to meet; an appointed place of meeting; an appointed market: V. to agree to meet; to engage a person to meet one at a particular time or place. **Tryst'ing**, imp.: N. an appointment. **Tryst'ed**, pp. **Tryst'er**, n. *-ėr*, one who trysts. **Trysting-day**, an arranged day of meeting or assembling. **Trysting-place**, a place designated for a meeting or for an interview; a rendezvous.

TSAR, n. *zâr:* see Czar. **Tsarina**, n. *zâr-ē'nă*, or, and more correctly, **Tsaritsa**, n. *zâr-ĭt'să*, the empress of Russia.

TSARSKOE SELO, *tsârs'kō-ā sā'lō* ('Imperial Town'): town of Russia, province of St. Petersburg; 18 m. s. of St. Petersburg. It is the royal residence and favorite resort of the imperial family. The carriage-road from the cap. to T. S. was constructed by Empress Catharine II. at a cost of 1,000,000 rubles; but the *route* now preferred is that of the railroad—the first laid down in Russia. The façade of the great palace of T. S. is 780 ft. long. Originally every statue, pedestal, and capital of the columns, vases, etc., were covered with gold leaf; only the dome and cupolas of the church are now gilded. The interior of the chapel is lavishly gilded, the ceiling being one sheet of gold. In the palace grounds, 18 m. in circumference, are an arsenal, with a fine collection of armor, weapons, and accouterments of all kinds, and several curious ornamental buildings, statues, artificial ruins, grottoes, lakes, waterfalls, etc. —Pop. 14,603.

TSCHUDI, *tshô'dē*, or **Shudy**: ancient and noble family of Switzerland, distinguished as authors, statesmen, and warriors. The two following are most notable.

Gilles or Aegidius T.: 'Father of Swiss History:' 1505–1572, Feb. 28; b. in Glarus. He studied at Basel, Vienna, and Paris, and travelled in Switzerland and Italy. On his return he took an active part on the Rom. Cath. side during the struggles of the Reformation in Switzerland, and in consequence was forced for a time to leave his native canton (1562). Two years later he was permitted to return. He was a prolific writer, not less than 166 works of his (in print or in MS.) being known. The most valuable is a *History of Switzerland* (Basel 2 vols. 1734).—See Fuchs's *Aegid. Tschudi's Leben und Schriften* (2 vols. St. Gall 1805).

Johann Jakob von T.: eminent traveller and naturalist: b. at Glarus, 1818, July 25. After completing his studies at Leyden and Paris, he undertook (1838) a voyage round the world; but circumstances restricted his design to an investigation into the nat. history and ethnography of Peru, where he remained five years. He was Swiss ambassador at Vienna 1866–83. T.'s principal works are: *Peru: Reiseskizzen aus den Jahren* 1838–42 (2 vols. St. Gall 1846); *Untersuchungen über die Fauna Peruana* (St. Gall 1844–47, 76 plates); the splendid work *Antiguedades Peruanas* (Vien. 1851), executed in conjunction with Don Mariano Eduardo de Rivera (Eng. transl. 1854); *Die Kechuasprache* (2 vols. Vien. 1853), containing a grammar and dictionary of the Peruvian language; and *Reisen durch Südamerika* (5 vols. 1866–69).

TSÊNG (or **Tsŭng**), **Ki-tsĕh**, *kē-tsĕh tsŭng*, Marquis: eminent Chinese statesman and diplomat, fellow of the Hanlin College: 1839, Dec. 7—1890, Apr. 12; b. prov. Hûnan, central China. T. was the eldest son of the late grand sec. Tsêng-Kwo-Fan, from whom he inherited the title *How* (2d order of nobility), commonly rendered 'Marquis.' His father had received this title as a reward for his services as chief in command in suppressing the Tae-ping rebellion. When less than a year old, T.'s father removed to Peking, and there T. received his education. He accompanied his father through all his operations against the Tae-pings, acting as his sec. for 12 years. In 1870 he had audience of the emperor, and was appointed an official of the fifth rank. His father died 1872, and, according to Chinese custom, T. was compelled to retire for 27 months (the usual period of mourning), during which he studied English. On his way back to Peking, he was hurriedly recalled by news of the death of his mother. This necessitated a further period of retirement, also devoted to English. His mourning over, at last he arrived at Peking, 1877, Aug., and had audience of the emperor; and in the following year was appointed minister plenipotentiary to France and Great Britain, arriving in London 1879, Jan. 1. In 1880, Mar., he was made ambassador and instructed to open negotiations for settlement of difficulties arising out of the rejection by China of the treaty of Livadia, in regard to the retrocession of Kuldja (q.v.). The treaty concluded by T. was ratified 1881. His settlement of the Tonquin difficulty showed diplomatic ability of the highest order. Returning to Peking 1886, he was made a sec. of the Tsûng-li-Yamen, or bureau of foreign affairs, and pres. of the board of admiralty, a new department consequent on the separation of naval affairs from the war dept. T. died at Peking, and was buried with great state in Hûnan.

TSETSE, *tsĕt'sē:* dipterous insect (*Glossinia morsitans*), a terrible pest of parts of s. Africa. It is not much larger than the common house-fly, of brown color, with four yellow bars across the abdomen. The wings project considerably beyond the abdomen. It is remarkably alert, at least during the heat of the day, and dexterously avoids any attempt to catch it with the hand. 'Its peculiar buzz,' Livingstone says; 'can never be forgotten by the traveller whose means of locomotion are domestic animals.' Its bite is almost certain death to the ox, horse, and dog. Livingstone, in one of his journeys, lost 43 oxen by it. Yet the bite is harmless to man, to the mule, the ass, and apparently to antelopes and the other wild animals of the country. The proboscis is adapted for piercing the skin, and the fly lives by sucking blood. At first no effect is perceived; but in a few days after an ox has been bitten, the eyes and nose begin to run, 'the coat stares as if the animal were cold,' a swelling appears under the jaw and sometimes at the navel, emaciation and flaccidity of the muscles ensue, purging, sometimes staggering and madness, finally death. On dissection, the cellular tissue under the skin is found injected with air, as if a quantity of soap-bubbles were scattered over it.—Livingstone's *Travels*.

TSONG-KHA-PA, *tsŏng-châ-pâ* (orthographically, *b*Tsong kha pa*): great reformer of Lamaism (see LAMA—*Lamaism*), who, by his co-religionists, was deemed an incarnation of the Bodhisattwa Amitâbha, or, according to others, of Manjus'rî or Vajrapân'i, and after his death was canonized by the Lamaist Church: b. in the middle of the 14th c., in the country Amdo, in the place where now stands the celebrated convent *ss*Ku'bum; d. 1419. In the legends of Tibet the statements following appear: T.-K.-P. was conceived by his mother in a supernatural, immaculate manner: he was born with a white beard, and from the day of his birth expressed himself clearly and fluently, and discoursed profoundly on religious matters. In his third year he resolved to renounce the world, and to devote himself to prayer and contemplation. In his travels he halted near L'Hassa or H'Lassa (q.v.), and studied assiduously the Buddhistic law, and soon became convinced of the necessity of reforming the actual worship and discipline of the Lamaist Church. When his teaching had attracted a great number of pupils, these, to distinguish themselves from the followers of the old system, who wore a red cap, assumed as their badge a yellow cap. When the great Lama, head of the church, attempted to stop the movement, he was immediately confused and overwhelmed in the presence of T.-K.-P. Thus far the legend. It is a historical fact that thousands of pupils thronged to hear and to adopt his doctrine. In 1407 or 1409 he founded the convent *d*Ga' *l*Dan, where (it is now believed) his body is preserved free from decay in a coffin suspended, like Mahomet's, between the earth and heaven; and later he founded other two convents, which, together, it is said, are now peopled with 30,000 monks of the yellow cap. His works are numerous and voluminous; the most celebrated of them is the *Lam nim chhen po*, or 'The Great Step-road toward Perfection,' consisting of three parts—namely, 'the road of the little, middle, and great man.' The sect which he founded is called the sect of virtue; and the principal reforms which he introduced into the Lama religion, as it then existed, were compulsory celibacy for the monks—the Lamas of the old doctrine being conditionally permitted to marry—prohibition of sorcery and necromancy—extensively practiced by wearers of the red cap—and the institution, at fixed periods, of religious exercises and of common prayers, and, consequently, of regular meetings of the whole community. His greatest achievement, however, was the organization of the Lamaist hierarchy as it still exists: see LAMA—*Lamaism*. His portrait is seen in all the temples of the yellow religion, often between those of the two Lamaist popes. His canonical name is 'the Celebrated Sage.'—See C. F. Koeppen, *Die Lamaische Hierarchie und Kirche* (Berlin 1859), and works quoted therein.

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* The small letters prefixed to the initials of the Tibetan words in this article are not pronounced.

T-SQUARE: a rule having a cross-piece (called a *helve*) at one end for making perpendicular lines, or for cutting angles—so called from its shape; a T-rule. RIGHT TO A T, perfectly square or correct, as if a T-square had been applied.

TSURNGA, *tsû-rông'ă:* seaport-town of Japan, cap. of the ken or administrative division of T., prov. of Echizen; on the n.w. coast of the main island, at head of a deep bay forming the finest harbor on the Sea of Japan. It possesses one of the oldest Shinto temples of the country, Kei-no-miya. Junk-building is the chief industry.—Pop. 15,000.

TSUSHIMA, *tsô'shē-ma:* two outlying islands forming a province of Japan, commanding the s. entrance of the Sea of Japan, and therefore of considerable strategic importance; 261 sq. m. Idzu-no-hara, the cap. (lat. 34° 12¼' n., long. 10° 29' w. of Tokio), is on the s. island, which contains many mountains and deep ravines. Wani-ura, on the n. island, is only 32 m. from Fusan, a treaty-port of Corea. The channel which divides the two islands varies from a few yds. to several miles in width. T. exports large quantities of dried fish, sea-weed, mushroom, and timber, chiefly to China. Gold and silver have been mined in T., and there are beds of coal of good quality. Ten thousand men forming the advance-guard of Kublai Khan's expedition for the conquest of Japan in the 13th c. were defeated here with great slaughter.—Pop. town 8,800; province 30,000.

TUAM, *tyô'am:* inland market-town and episcopal seat of Galway, Ireland; on the Harrow, branch of the Clare; 125 m. w. of Dublin, with which it is connected by railway. It was an archiepiscopal see from the 12th c., and in the Rom. Cath. Church still has this rank; but 1839 the province was united, in the Established Church, with the archbishopric of Armagh, of which T. is now a suffragan see. T. has little trade, except in agricultural produce; but there are tanneries, a flour-mill, and a brewery. The Rom. Cath. church is a modern structure of great size and very striking architecture. Both the Rom. Cath. abp. and the Prot. bp. have residences in T. Under the direction of the former is the College of St. Jarlath, numerously attended, designed chiefly for clerical students. The schools, under care of the brethren of the Franciscan order, are numerously attended.—Pop. (1871) 4,423; (1881) 3,567, more than 3,000 being Rom. Catholics; (1891) 3,012.

TUARIKS': see BERBERS.

TUB, n. *tŭb* [Dut. *tobbe;* Low Ger. *tubb;* Ger. *zubere,* a two-handled vessel, a tub—from OHG. *zwo,* two, and *beran,* to bear]: an open vessel made of staves and hooped, used for various purposes, as a wash-*tub,* butter-*tub,* etc. (compare bath-tub); a box in which coals are sent up the shaft of a coal-mine; a small liquor-cask formerly used in smuggling-operations; in *OE.,* a state of salivation, so named because patients were formerly sweated in a tub: V. to plant, set, or put in a tub; *familiarly,* to take a bath. TUB'BING, imp.: N. in *mining,* the lining of a shaft with wood or iron for the purpose of preventing the falling in of the sides or of loose material from them, often made air and water tight. TUBBED, pp. *tŭbd.* TUB'BY, a. *-bĭ, familiarly,* like a tub. TALE OF A TUB, any ridiculous story.

TUBA, n. *tū'ba* [L., a trumpet]: a brass wind-instrument, the lowest as to pitch in the orchestra; also a high-pressure reed-stop of 8 ft. pitch on an organ; called also tuba mirabilis, tuba major, tromba, or ophicleide.

TUBE, n. *tūb* [F. *tube;* It. *tubo*, a tube—from L. *tubus*, a pipe, a tube]: a pipe; a hollow cylinder of wood, metal, or glass for conveying fluids, etc.; a siphon; one of the vessels of animals or plants for conveying fluids or other substances; a telescope, particularly without the fittings: V. to furnish with a tube or tubes. **Tu'bing**, imp.: N. tubes collectively. **Tubed**, pp. *tūbd*. **Test-tube** (see under **Test** 3). **Tu'biform**, a. *-bĭ-fawrm* [L. *forma*, shape]: in the form of a tube.

TUBER, n. *tū'bėr* [L. *tuber*, a hump, a knob or excrescence—from *tumĕō*, I swell]: a thickened, roundish, underground stem, as a potato, a turnip, etc.; in *surg.*, a swelling; in *anat.*, the rounded projection of a bone. **Tuberiferous**, a. *tū'bėr-ĭf'ėr-ŭs* [L. *fero*, I bear]: producing or bearing tubers, as the potato.

TU'BER: in *botany*, a subterranean stem, thickened by approximation of the nodes and swelling of the internodes, with latent buds along its sides ready to produce new plants in the succeeding year. The cellular tissue is unusually developed, and in general a large quantity of amylaceous matter is accumulated, whence the economical value of tubers, as in the potato, the Jerusalem artichoke, and the arrow-root. Tubers are capable of being employed for propagation of the plant, by division into portions, each containing an *eye* or bud, according to the usual mode of planting potatoes. The most valuable tubers are those above named, but many others are used in different parts of the world: see **Oxalideæ**: **Tropæolum**: **etc.**

TUBERCLE, n. *tū'bėr-kl* [OF. *tubercle;* F. *tubercule*—from L. *tuber'cŭlum*, a small hump or protuberance—from *tūber*, a hump: It. *tubercolo*]: a little knob; in *med.*, a small, hard, local tumor, which, when deposited in numbers on the lungs, and suppurating, produces the disease known as consumption (see **Tuberculosis**): a pimple or tumor appearing on the skin; in *bot.*, a swollen simple root, as of some orchids; a little tuber. **Tubercled**, a. *tū'bėr-kld*, having or affected with tubercles; in *bot.*, covered with warts. **Tubercular**, a. *tū-bėr'kū-lėr*, full of small knobs or tubercles: caused by tubercles, as consumption; prone to generate tubercles. **Tuber'culate**, a. *-lāt*, tubercled; in *bot.*, having tubercles. **Tuber'culous**, a. *-lŭs*, or **Tuber'culose**, a. *-lōs*, affected with tubercles; disposed to tubercular diseases.

TUBERCULIN, *tū-bėr'kū-lin* [L. *tuberculum*, tubercle, and term. *-in*]: paratoloid; the substance used by Prof Robert Koch for cure of tuberculosis: see KOCH, ROBERT.

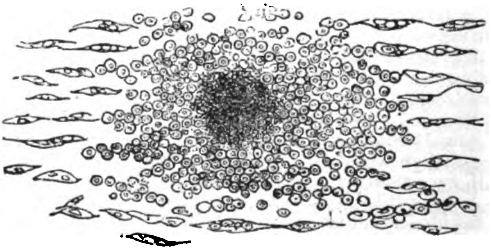
TUBERCULOSIS, n. *tū-bėr'kū-lō'sis* [L. *tuber'culum*, a small hump]: a disease caused by a specific rod-shaped micro-organism, the bacillus tuberculosis, discovered by Robert Koch in 1882, and characterized by the development of small masses of inflammatory tissue, called tubercles. The irritating action of the bacillus causes an extravasation of lymphoid cells, one or more of which in the centre usually have several nuclei, the middle zone being compressed into an 'epithelioid' form, while the outer cells remain unchanged. This unit of inflammation may be joined to others so as to form masses the size of a millet seed, miliary tubercles, or much larger aggregations.

The question naturally arises, Why does this formation of small tumors constitute a serious and fatal disease? The answer is, 1, that the bacilli themselves secrete poisons, which are depressing to the heart, which cause fever and a general weakening of vitality; 2, that nutrition and strength are exhausted in forming useless structures; 3, that these tissues, in spite of drawing on the general nutritive store of the body, are not sufficiently supplied with blood to prevent their breaking down into necrotic masses, or by the aid of bacteria of suppuration, into abscesses; 4, that the bacteria of suppuration, thus affording lodgment, add their toxins to those of the tubercle bacilli proper.

Tuberculosis is a disease of many manifestations. Occurring in the lungs, it constitutes consumption; in the larynx, it produces ulcerations, with huskiness or entire loss of voice as an indication of the diseased process. In the bowel it also causes ulceration with consequent diarrhea, which, in turn, produces emaciation and finally death by exhaustion—the whole course of the disease being indicated by the term marasmus. Bones are especially subject to tubercular inflammation, probably three-quarters of all cases of caries or ulceration of bone being due to this cause, most of the remaining cases being of syphilitic origin; Pott's disease of the spine is tubercular caries of the vertebræ. Hip-joint disease is usually a tubercular arthritis; white swelling of the knee is a precisely analogous process, and similar inflammation may occur in other joints. Sinuses crowned with masses of unhealthy granulation tissue and leading to diseased bone, near or remote from joints, are frequently tubercular. Many brain tumors are tubercular masses, and basilar meningitis, which is almost always fatal, is of the same origin. Lupus is a mere technicality for skin-tuberculosis. The testicle, kidney, and urinary passages are frequently the seat of tuberculosis and pleurisy is frequently, and peritonitis occasionally, tubercular. In short, almost all tissues and organs of the body are liable to the inroads of this disease, which has been too truly termed, 'the scourge of civilization.'

Tubercular inflammations, though ultimately presenting the same appearances, differ according as the germs are lodged from the air upon pre-existing areas of inflammation or as they are disseminated from the blood current. In a sense, it is correct to speak of a 'cold on the lung running into consumption.' A person having an ordinary bronchitis may inhale dust containing the dried exhalations of a consumptive, the virulence of the germs being unabated by anything short of absolute destruction by heat. The secretion in the lungs affords an excellent pabulum for the bacilli which might otherwise be strangled by the scavenger cells of the blood or be passed out after having rested in the lungs as foreign material. In the rich soil provided for them, they multiply, producing tubercles, at first superficial, but tending to infiltrate deeper structures. Under the most favorable experimental circumstances, the development of large numbers of tubercle bacilli from a few ancestors occupies nearly two weeks, much longer than in the case of germs of suppuration, which may breed a million-fold in a day or two. Thus, at the outset, it is impossible to distinguish between a simple and a tubercular inflammation of the air-passages. Later, however, the sputum contains an abundance of bacilli.

When the bacilli enter the tissues from the blood, they breed under cover, so to speak, producing miliary tubercles and the systemic symptoms of infection at first without local signs. The disease, in this form, is called miliary tuberculosis, and it may simulate typhoid, malaria, or some other continued fever, and an exact diagnosis is extremely difficult. Obviously, there can be no contamination of sputum or other secretions with bacilli till epithelial barriers have been broken down. Thus, while the demonstration of tubercle bacilli in the sputum or other secretion is positive evidence of the existence of the disease, their absence, unless persistent, is not of much weight as an argument against the existence of tuberculosis.



Tubercle.

As to the predisposing causes of tuberculosis, heredity and diathesis—the latter being also hereditary—are usually mentioned. There are two types of the tubercular diathesis, one the pretty, blonde type, with thin, fair skin, regular features, light hair, and general lack of pigment, slight deposition of fat, clubbed fingers, and a 'delicate' appearance; the other the ugly type, with sallow complexions, dark, coarse, bristly hair, stunted development of the long bones, and irregular features. But it must be admitted that some very typical exemplars of these types escape the disease, and that all sorts of complexions, features, and builds are found among tubercular patients. The term scrofula is applied, sometimes to the manifestation of one or other of these diathetic pictures, sometimes to the appearance of mild tuberculosis of the skin and lymph-glands, sometimes to quite foreign conditions. The term is used so vaguely and is so connected in history with the superstition of the efficacy of the 'king's touch' that it is better to discard it altogether. A family history of tuberculosis can be obtained in most cases of the disease—and, more or less distantly, from nearly everyone without reference to physical condition—and, till the true germ cause of the disease was known, heredity was considered the prime factor. But there are not a few who oppose this view and emphasize the contagiousness of the disease. Thus, A. L. Benedict, in the *Popular Science Monthly* of Nov. 1895, says 'on the face of the matter, it would seem that a germ that kills a fifth of the civilized human race, is not very exacting as to the soil afforded. * * * Nearly everyone is, at one time or another, susceptible to tuberculosis and escapes or becomes a victim according as he is free from or exposed to contagious influences. A mother and her baby both die of consumption, and heredity is blamed, but does the child inherit the bacilli or does it imbibe them in the milk—where they have been repeatedly found—or are they inhaled as the mother bends over the child and smothers it with kisses? Again, brothers and sisters drop off, one after another, and it is said that "consumption runs in the family;" but we would seek another explanation if the same succession of deaths occurred from scarlet fever. Tubercle bacilli have been found in the dust on top of door and window casings, in carpets, bedding, and wall paper. Is it not rational to suppose that these foci of infection have more to do with the death of successive members of the family than a hereditary taint? When we note that members of the family who leave home often escape the disease and that other persons, occupying the same house latter, contract it, is not the evidence tolerably clear?'

Tuberculosis is not without a tendency to recover. Each miliary tubercle tends to necrosis, the tissue becoming a cheesy mass in which, later, lime salts may be deposited. In this process, the bacilli in the centre are quite apt to be destroyed. If all were thus destroyed, the slight unfavorable reaction from the necrotic process would be more than compensated for, and the disease would be strictly self-limited, but, unfortunately, enough bacilli usually survive to start new foci, and the disease increases. Still, autopsies on persons who have died from accident or from some other non-tubercular cause, often reveal the encapsulated caseous or calcified remains of previous tubercular disease, usually of the lung. Thus a very large proportion of the human race have, at one time or another, been the seat of a tuberculous process from which recovery has occurred, either spontaneously or as the result of treatment for a condition which was not positively identified as tuberculosis. Surgical tuberculosis is also subject to removal, though by more or less mutilating operations, or to encapsulation and latency. To this latent form of tuberculosis may be ascribed the entrance of bacilli into the blood and the lighting up of a general miliary tuberculosis. Tubercular meningitis and other forms due to miliary dissemination of tubercle bacilli, are almost uniformly fatal, while well-developed tuberculosis of any part of the body is usually so.

For treatment, etc., see CONSUMPTION or PHTHISIS: SCROFULA: GERM THEORY: HIP JOINT DISEASE: POTT'S DISEASE: ETC.

TUBEROSE, a. *tū'bėr-ōs*, or **TU'BEROUS**, a. *-ŭs* [L. *tūber*, a protuberance, a hump]: having knobs or tubers; connected into a bunch by rootlets, as in the potato. **TU'BEROUSNESS**, n. *-nĕs*, state of being tuberous. **TU'BEROS'ITY**, n. *-ŏs'ĭ-tĭ*, in *anat.*, a kind of projection or elevation; the state of being knobbed. **TUBEROSE**, n. *tūb'rōs* or *tū'bėr-ōs*, a highly odoriferous flowering plant of the genus *Polianthes*, nat. order *Liliaceæ*, having a funnel-shaped perianth, with 6-parted limb, stamens inserted in the tube of the corolla, a superior capsule, and flat seeds. The COMMON T. (*P. tuberosa*), native of Ceylon, has rounded bulbous roots; a cylindrical, upright, unbranched stem, three or four ft. high; both root-leaves and stem-leaves sword-shaped, and very acute; flowers spiked and somewhat aggregated, large, pure white, the tube a little curved. The plant grows well in the south, but bears the open air in more northern climates only during summer. In the n. United States it is a greenhouse plant. The roots are a considerable article of export from the s. to the n. of Europe; the plant being in high esteem for the beauty and fragrance of its flowers, whose odor is most powerful after sunset, and has been known to cause headache and asphyxia in a room. The fading flowers emit, in certain states of the atmosphere, an electric light and sparks. The flowers yield an essential oil used by perfumers; more than a ton of flowers for this purpose are yearly raised in the Var valley, France. Another species, *P. gracilis*, is said to be found in Brazil. The T. has been known in Europe about three centuries.

TUBE'-WELL: contrivance for obtaining a moderate supply of water in a very short time by application of a limited amount of manual power. The apparatus—invented in the United States—comprises three parts—a tube or well, a rammer or monkey, and a pump. The tube consists of an iron pipe about 1¼ inch diameter, made in pieces of convenient length, which can be screwed together end to end. The pipe terminates at the lower end with a solid tempered steel point, and is perforated for about 16 inches from the end with small lateral apertures. The pipe is driven into the ground far enough to keep it upright without falling, and is temporarily kept in that position by hand. A strong iron clamp is fixed to the tube by clamping-screws at a short distance above the ground; and another clamp is similarly fixed higher up. Two pulleys are supported by the upper clamp. The rammer or monkey consists of a 56-lb. iron weight, which slides up and down the tube, encircling it like a ring or belt. The rammer, being raised by two men, is allowed to fall with its full weight on the lower clamp, thus giving a series of blows which drive the tube into the ground. When the lower clamp becomes level with the surface of the ground, it is raised up the tube; as is likewise the other clamp, which supports the two pulleys. Successive lengths of tube and successive shiftings of the clamps afford the means of enabling the pointed and perforated end of the tube to be driven down to a depth whence water can be obtained. When the symptoms of water being reached appear, a small suction-pump is applied, and the water pumped up. It is only when water is expected to be reached at a moderate distance below the surface that this apparatus is available, as it is not powerful enough for very great depths, nor is the bore of the tube sufficient for a large influx of water; but where the required conditions exist, the apparatus saves a great amount of time and expense in sinking a well. As the water is pumped up, the loose sand and gravel disappear from the point of the tube, allowing the formation of a small pool or well around its lower end; while small pebbles which collect around the perforations act as a sort of filter. The tube can be extracted from the ground by forcing the rammer upward against the upper clamp. Tube-wells have been sunk to a depth of 10 ft. in 22 minutes—obtaining water; and water had been reached in even less time. One was sunk to a depth of 150 ft. in Ithaca, N. Y. This form of well has less liability than other forms to receive dirty surface-water; and no accident is possible from foul air or from the falling in of the sides. Tube-wells have been sent out with troops on military expeditions.

TUBICOLÆ, n. plu. *tū-bĭk'ō-lē* [L. *tubus*, a tube; *colo*, I inhabit]: order of *Annelida* (q.v.), having a tubular shelly covering, into which the animal can entirely retreat, but from which, when undisturbed and disposed to activity, it projects its head and gill-tufts. The genus *Serpula* (q.v.) is a good example. TUBIC'OLOUS, a. *-ō-lŭs*, inhabiting a tube. TUBIC'OLAR, a. *-ō-lėr*, pertaining to the Tubicolæ.

TUBICOLIDÆ, *tū-bĭ-kŏl'ĭ-dē*, or GASTROCHÆNIDÆ, *găs-trō-kē'nĭ-dē:* family of lamellibranchiate mollusks, remarkable for the calcareous tube into which the proper shell is cemented: for examples, see ASPERGILLUM: CLAVAGELLA: GASTROCHÆNA. The *Pholadidæ*, including Pholas (q.v.) and Teredo (q.v.), are included by some in this family. *Teredo* has the characteristic tube, but *Pholas* has not.

TUBICORNOUS, a. *tū'bĭ-kŏr'nŭs* [L. *tubus*, a pipe; *cornu*, a horn]. having hollow horns; composed of a horny axis, covered with a horny sheath, as in the TU'BICORNS, *-kŏrnz*, a family of ruminants.

TÜBINGEN, *tü'bĭng-ĕn:* important town of Würtemberg, circle of the Black Forest; 20 m. s.s.w. of Stuttgart, on the Neckar, at the influx of the Steinlach. T., which is in one of the most beautiful and fertile districts of the Oberland, is an old place, irregularly built, with steep, narrow streets; but the suburbs, especially around the new university, are very pleasant. W. from T. is the Schloss, built by Duke Ulrich, 1535. Book-printing, book-selling, working in copper, weaving, bleaching, trading in field-produce, wine, and fruits, are principal industries. T. has three Prot. churches and one Rom. Cath. church, a chamber of manufactures, a Bible Soc., and various educational and benevolent institutions. But it owes its celebrity wholly to its university. Founded 1477 by Eberhard im Bart, afterward first Duke of Würtemberg, the Univ. of T. soon became a distinguished seat of learning, was favored for a time with the presence of Reuchlin (q.v.) and Melanchthon (q.v.), and continued to flourish long after the Reformation had firmly established itself. The univ. adopted the Reformed faith 1534, and received 1536 the addition of a Prot. theol. seminary: a Rom. Cath. theol. faculty, the 'Convict,' was added. The Thirty Years' War (q.v.) was an almost fatal check to its prosperity; and it was not till the early part of the 19th c. that it began to regain reputation. Under Baur (q.v.), it became celebrated as a school of historico-philosophical theology, known as the 'Tübingen School,' whose influence on the development of religious thought was for a time very great, but has now nearly ceased, having given place to new lines of criticism. The univ. has 6 faculties, more than 80 professors and teachers, a library of 200,000 vols. (in Duke Ulrich's *Schloss*); and is attended annually by 700 to 850 students, of whom between 200 and 300 are foreigners, many from the United States. Connected with it are an anatomical and physical institute, a botanical garden, a chemical laboratory, a collection of zoology and comparative anatomy, one of minerals, one of coins and antiquities, fencing, gymnastic, and swimming schools, etc.—Pop. of T. (1880) 11,708; (1885) 12,660; (1890) 13,273.

TÜ'BINGEN SCHOOL: name given to two widely different schools of theology—the Old T. School and the Modern T. School, whose chief representatives were connected with the University of Tübingen, Germany. The Old School, essentially orthodox, was founded by Gottlob Christian Storr, prof. of theology.

TÜ'BINGEN-THEOLOGY: the theological teachings prominent in the Univ. of Tübingen under the lead of Ferdinand C. Baur (q.v.); though it is a term of wide and varied meaning, sometimes expressing little more than Paulinism, at others extreme rationalism.

TUBIPORE, n. *tū'bĭ-pōr* [L. *tubus*, a pipe; *porus*, a passage]: one of a genus of coral zoophytes; organ-pipe coral.

TUBULAR, a. *tū'bū-lėr* [L. *tubŭlus*, a small pipe or tube—from *tubus*, a pipe: It. *tubulo*]: having the form of a tube or pipe; consisting of a tube or pipe. **Tubular boiler**, a boiler made up or consisting of tubes. **Tubular bridge**, a bridge consisting of a great iron tube through which a roadway passes (see below). **Tu'bulate**, a. *-lāt*, or **Tu'bulated**, a. *-lā-tĕd*, made in the form of a tube or pipe; furnished with a small tube or tubular opening. **Tu'bule**, n. *-būl*, a small pipe or tubular body. **Tubuliform**, a. *tū-bū'lĭ-fawrm* [L. *forma*, a shape]: having the form of a tube or tubule. **Tubulous**, a. *tū'bū-lŭs*, resembling a tube; fistular; composed of tubes; in *bot.*, composed of tubular florets; having a bell-shaped mouth or border, somewhat tubular in its form.

TUB'ULAR BRIDGE: tube used as a bridge. The advantages of the tube for carrying a level roadway across a large span were brought into general notice by Robert Stephenson, engineer of the Chester and Holyhead railway, in constructing the bridges for that railway across the Menai Strait (q.v.). It was required by the admiralty that these bridges, the Britannia and the Conway, should be constructed, so as not to interfere with the navigation, with clear spans of more than 400 ft. The largest arched spans previously constructed did not exceed 240 ft.; and suspension-bridges not being then deemed suitable for heavy and rapid railway traffic, the engineer was obliged to devise some new form. Stephenson, having selected the tubular form, proceeded, in conjunction with Fairbairn, to make elaborate experiments on wrought-iron tubes, to determine the most suitable arrangement of their materials. They found that a rectangular tube, of which the top and bottom were cellular (see Strength of Materials), gave greatest strength with least material. The span of the Conway tube was 400 ft.; while the tubular part of the Britannia Bridge consisted of two spans of 460 ft., and two of 230 ft. each in the clear. The foundation-stones of these bridges were laid 1846 and 1847 respectively: see Britannia Tubular Bridge. Since that time, many important bridges have been constructed on this principle. One of the grandest is the Victoria Bridge, over the St. Lawrence, near Montreal, in Canada. The total length of this bridge is 9,144 ft., or nearly 1¾ m. It is in 24 spans, of 242 to 247 ft. each, and one span of 330 ft. The greatest depth of the river is 22 ft., and the average rate of the current 7 m. per hour. The bottom of the centre tube is 60 ft., and at the abutments the bottom is 36 ft. above the water, so that there is a rise of 1 in 130 in the roadway toward the centre of the bridge. In the tubes, 9,000 tons of iron were used, and 1½ million of rivets; total surface of iron was 32 acres; and as it received 4 coats of paint, the total painting was 128 acres. There were 2,713,095 cubic ft. of masonry; and 2,280,000 cubic ft. of timber in the temporary works, dams, etc.; and more than 3,000 men were employed. The first stone was laid 1854, July

20, and the first train passed over 1859, Dec. 17. The total cost was about $7,000,000.

Notwithstanding the success of these structures, the T. B. has now been largely superseded by the lattice or trellis, on account of the great saving in the material of which the sides are composed, effected by using open lattice-work instead of the solid plated side of the tube. By the lattice arrangement, the material is more capable of arrangement in the direct line of the strains; and the section of the lattice bars can be accommodated to the strain so that there shall be no material which is not carrying its due share of the load. The first large lattice structure of this nature was the Boyne Viaduct, on the Dublin and Belfast Junction railway. Besides the considerable saving in material, the facilities of the lattice form for repairs and painting, and the exposure of a smaller surface to the wind, are reasons for its preference: see **Lattice-bridge: Bridge.**

TUBULIBRANCHIATA, *tū-bū-lĭ-brăng-kĭ-ā'ta:* order of gasteropodous mollusks, having two branchiæ behind the heart, the whole animal inclosed in a long shelly tube, which is sometimes straight, sometimes twisted in an irregular spiral.

TUCK, v. *tŭk* [Ger. *zucken*, to draw in, to shrug: Low Ger. *tukken*, to shrug the shoulders: a variant of Tug, which see]: to turn or gather up; to draw into a narrower compass; to press in or together, as the bedclothes: N. a horizontal plait or fold made in a garment to shorten it; a kind of net; *familiarly*, anything good to eat; eatables. **Tuck'ing**, imp. **Tucked**, pp. *tŭkt*. **Tucker**, n. *tŭk'kėr*, a fold of cloth for shading the bosom of a woman, above the top of the bodice; an ornamental fold to a woman's dress. **To tuck in**, *familiarly*, to eat heartily; to devour.

TUCK, n. *tŭk* [perhaps from F. *estoc*, a rapier, stock of a tree (see Stock): but comp. W. *twca*, a sort of knife; *twc*, a cut]: in *OE.*, a long narrow sword; a rapier.

TUCK, n. *tŭk* [contr. from *tucket*]: sound or beat, as '*tuck* of drum.'

TUCK, *tŭk*, **Joseph Henry**: inventor: b. Dorchester, Mass., 1812, Mar. 12. He graduated at the Boston High School; became a watch-maker and candle-manufacturer; and was employed in England as a civil engineer 1837–65. He organized the company that laid the submarine cable between Dover and Calais 1848–9; drew the plans for excavating the Suez canal; took out 55 patents in various countries for mechanical inventions and improvements; and engaged in real-estate operations in Brooklyn 1869.

TUCKAHOE, n. *tŭk'kă-hō* [an Amer. Indian word, signifying bread]: a curious tuberous, vegetable-like production of unknown origin, found in several parts of the United States, growing under the surface of the ground like the truffle of Europe, and sometimes called *Indian bread*. It is not to be classed with the fungi. It is almost entirely of *pectin*, and has no cellular structure. In some places it is used like arrowroot, as an article of diet.

TUCKER, *tŭk'ėr*, ABRAHAM: English author whose reputation falls short of his merits: 1705, Sept. 2—1774, Nov. 20; b. London; of good family. He studied at Merton College, Oxford, and 1726 became a member of the Inner Temple. T. inherited a large fortune from his father: and 1727 purchased Betchworth Castle and estate, near Dorking, Surrey. Having all the ease and quiet happiness of an English gentleman of the 18th c., he had also a frank, generous nature and a sincere love of intellectual pursuits, which prevented his misuse of his advantages. He was an industrious student, a man of keen observation, of much innocent and cheerful humor, and of methodical business habits. T.'s great work is *The Light of Nature Pursued:* it was begun 1756, and formed the chief literary occupation of his life. It extended to seven vols., of which four were pub. during his life, under the pseudonym Edward Search. It is not a systematic treatise, but consists of a series of disquisitions on metaphysics, theology, morals, etc., all showing remarkable originality, simplicity of humor, ingenuity of illustration, and solidity of understanding. In his intellectual philosophy he professed to follow Locke. Paley, in his discussion of utilitarianism, acknowledged his obligations to T. The standard ed. is edited by the author's grandson, Sir Henry Mildmay.

TUCKER, *tŭk'ėr*, JOSIAH, D.D.: 1711-1799, Nov. 4; b. Laugharne, Wales: Anglican clergyman. He was educated at Oxford; became rector of St. Stephen's, Bristol, 1749, prebendary of Bristol 1756, and dean of Gloucester 1758; and greatly aided the patriot cause by openly advocating the peaceful separation of the Amer. colonies from England, and by publications setting forth the real state of political affairs in America.

TUCK'ER, ST. GEORGE, LL.D.: 1752, June 29—1828, Nov. 10; b. Port Royal, Bermuda: jurist. He removed to Va. to complete his education 1771; graduated at William and Mary College 1772; studied law and began practicing in Va.; took part in the expedition against Bermuda 1776; commanded a patriot regt. at Yorktown; and married the mother of John Randolph. He was a judge in the Va. state courts nearly 50 years; judge of the court of appeals 1803-11, and of the U. S. dist. court of e. V. 1813-27; prof. in William and Mary College; and commissioner to revise the state laws.

TUCK'ER, SAMUEL: 1747, Nov. 1—1833, Mar. 10; b. Marblehead, Mass.: naval officer. He was bred to the sea, commanded a Boston and London merchantman when 21 years old, and was commissioned capt. in the American navy 1776, Jan. 20. That year with the armed schooners *Franklin* and *Hancock* he captured more than thirty prizes; 1777 became commander of the frigate *Boston;* 1778 took out John Adams, minister to France; and returning 1779 captured 5 prizes and the Brit. frigate *Pole*, and convoyed a fleet of merchantmen from the W. Indies to Philadelphia. He was captured while aiding the defense of Charleston

1780; paroled 1781; resumed command of his vessel and captured 7 prizes; was again captured, but escaped; and after the war received the thanks of congress. In 1818 he captured a Brit. privateer with valuable stores off the Me. coast.

TUCK'ER, WILLIAM JEWETT, D.D.: clergyman: b. Griswold, Conn., 1839, July 13. He graduated at Dartmouth College 1861, and at Andover Theol. Seminary 1866; was pastor of a Congl. church in Manchester, N. H., 1867–75, and of the Madison Square Presb. Church, New York, 1875–79; was prof. of sacred rhetoric at Andover Theol. Seminary, 1879–92; and was elected pres. of Dartmouth College, 1892. He received his degree from Dartmouth, 1875, and became one of the editors of *The Andover Review* 1884.

TUCKERMAN, *tŭk'ėr-man*, **HENRY THEODORE**: author: 1813, Apr. 20—1871, Dec. 17; b. Boston, Mass. He visited Italy 1833, and on his return home published *The Italian Sketch-book* (1835): he spent 1837–39 in Europe, again visiting Italy and Sicily, and there writing *Isabel, or Sicily: a Pilgrimage*. He now began to contribute to magazines sketches, essays, and literary and art criticisms: most of these he later collected and published in volumes. He wrote 2 vols. of poems and several biographies. One of his earlier works, *Thoughts on the Poets* (1846), was translated into German by Dr. Emil Müller, and pub. at Marburg 1856. His vol. *Mental Portraits* (London 1853) was revised and enlarged 1857 and then named *Essays Biographical and Critical, or Studies of Character*.

TUCKET, n. *tŭk'ĕt* [It. *toccata*, a prelude—from *toccare*, to touch (see TOUCH)]: in *OE.*, a kind of flourish or prelude on a trumpet. **TUCKET-SONANCE**, *-sō'năns*, in *OE.*, the sound of the tucket.

TUCKING-MILL, n. *tŭk'ĭng-mĭl* [W. *tew;* Gael. *tiugh*, thick]: a fulling-mill for thickening cloth.

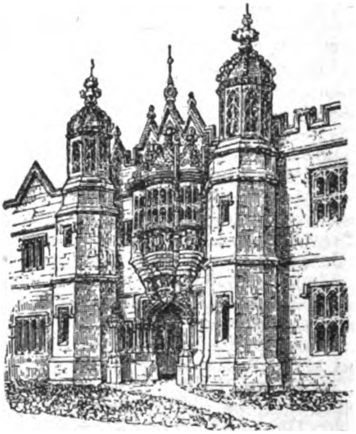
TUCSON, *tū'sŏn* or *tŭk'sŏn*: city, cap. of Pima co., Ariz.; on Santa Cruz river, and on the Southern Pacific railroad; 250 m. e. of Yuma. It is in an agricultural, stock-raising, and mining region; has a large business in reduction of gold, silver, and copper ores; and ships gold-dust, hides, and wool, in considerable quantities. It contains the most costly court-house in the terr., new public-school building (cost $50,000), city hall, public library, opera-house, several hotels, handsome Bapt., Congl., Meth. Episc., and Rom. Cath. churches; Univ. of Ariz., Institute of St. Joseph, Rom. Cath. convent and hospital; water, ice, and gas works; 2 national banks (cap. $100,000), U. S. depository; and 2 daily and 3 weekly newspapers. An extensive system of irrigating-works has been provided in the outlying region.—T. was founded by the Jesuits 1560, and was the cap. of the terr. 1867–77.—Pop. (1880) 7,007; (1890) 5,150.

TUCUMAN, San Miguel de, *sân me-ghĕl' dā tô-kô-mân':* town of the Argentine Confederation, cap. of prov. of T.; about 120 m. n.w. of Santiago. T. has a cathedral, convents, and a Jesuits' college. It is connected by rail with Cordova and Rosario; it manufactures sugar, leather, and brandy, and has active trade in oxen and mules. Here, 1816, a congress of deputies from the various Argentine provinces proclaimed their independence of Spain.—Pop. (1888) 25,000; of prov. (1887) 210,000.

TU'CUM and TU'CUMA PALMS: see Astrocaryum.

TUDELA, *tô-thā'lâ* (*Tutela* of the Romans): city of Spain, prov. of Navarra; on the left bank of the Ebro (here crossed by a bridge of 17 arches); 46 m. by rail n.w. of Saragossa. It is a dull, gloomy-looking place, with narrow streets and lofty houses; but the promenades along the river are very fine, as are also the *plazas*, or public squares. T. is the seat of a bp.; has a Gothic cathedral, a medical college, and manufactures of coarse woolen cloths, soap, earthenware, etc.; and has active trade in the products of the district.—Pop. (1877) 10,086; (1887) 9,218.

TUDOR, *tū'dėr:* family of Welsh extraction, which occupied the throne of England 1485–1603. In the Welsh language, T. is the equivalent of Theodore. Owen T., first of the race known in history, is said to have descended from the ancient Welsh princes; but little is known of his origin, except that his father had to quit Wales on a charge of murder, and was outlawed. Owen T. himself seems to have been a brewer at Beaumaris, in Anglesey; afterward a retainer in the suite of the bp. of Bangor; and to have fought at Agincourt. His dancing at a court pageant is said to have ingratiated him with Catharine of Valois, widow of Henry V., who appointed him clerk of the household. His relations with Catharine roused public indignation, and the queen was compelled to take refuge in a convent at Bermondsey, where she died. T. was sent to Newgate, but succeeded in escaping and obtaining two audiences of the young king, Henry VI., who afforded him protection and conferred on him the lieutenancy of Denbigh. Two sons had been born to him by the queen. On the elder, Edmond, the king bestowed the earldom of Richmond; and on the younger, Jasper, the earldom of Pembroke. The Earl of Richmond married Margaret, daughter and heiress of John Beaufort, Earl of Somerset, whose father was an illegitimate son of John of Gaunt by Katherine Swynford. Henry, Duke of Richmond—sole issue of Richmond and the heiress of Somerset—having been invited from abroad to deliver England from Richard III., ascended the throne after Richard's death at Bosworth, as Henry VII. The partizans of the House of Lancaster supported him on the extinction of the lawful descendants of John of Gaunt; and by his marriage with Elizabeth, eldest daughter of Edward IV., and representative of the House of York, he was considered to have united the factions of the White and Red Rose. Five sovereigns of the House of T. successively occupied the throne—Henry VII., Henry VIII., Edward VI., Mary, and Elizabeth (see these titles). From Elizabeth, the last of the line, the crown passed to James VI. of Scotland, of the House of Stuart (q.v.), in virtue of his descent from Margaret T., daughter of Henry VII. and queen of James IV. of Scotland. Strength of will was the prominent characteristic of the sovereigns of the House of T.; their rule, generally prosperous, was far more arbitrary and despotic than that of the Plantagenets. Parliament was in many cases but the exponent of the royal will, and taxes were frequently exacted, and penal statutes dispensed with, by the prerogative alone. The condition of England under the Tudors differed from despotic monarchies chiefly in the important respect that the sovereign had no standing army. The T. monarchs exercised a remarkable influence on ecclesiastical affairs: under their rule the Reformation took place, and the Anglican Church was developed.



Tudor Architecture, Hengrave Hall, Essex, 1538.

TUDOR, *tū'der*, WILLIAM: 1750, Mar. 28—1819, July 8; b. Boston: lawyer. He graduated at Harvard 1769; was admitted to the bar 1772; was judge-advocate on Washington's staff 1775–78; member of both houses of the Mass. legislature; sec. of state 1809–10; a founder of the Mass. Historical Soc.; and vice-pres. of the Mass. Soc. of the Cincinnati.

TU'DOR, WILLIAM: author: 1779, Jan. 28—1830, Mar. 9; b. Boston; son of William T. (1750–1819). He graduated at Harvard 1796; engaged in mercantile business; made several trips to Europe; spent some time in literary pursuits in France and Italy; and, returning to Boston, founded the Anthology Club, and was principal writer on its organ, *The Monthly Anthology*, 1803–11. He was also a founder of the Boston Athenæum, projector and first editor of *The North American Review*, and originator of the Bunker Hill monument. In 1823–27 he was U. S. consul at

Lima, and from 1827 till his death U. S. chargé d'affaires at Rio Janeiro. He published several works and left much MS.

TU'DOR STYLE: in *arch.*, indefinite term applied to the late Perpendicular and the transition from that to Elizabethan.

TUEDIAN, a. *tū-ĕ'dĭ-an:* of or belonging to the region adjacent to the Tweed.

TUESDAY, n. *tūz'dā* [AS. *tywes-dæg*, Tuesday—from *Tyw*, the god of war; *dæg*, day: in Scand. myth., *Tuisco*, the god of war: Icel. *tysdagr:* Sw. *tisdag:* Dan. *tirsdag*]: the third day of the week (see WEEK).

TUFA, n. *tū'fă*, or TUFF, n. *tŭf* [It. *tufo*, soft sandy stone—from L. *tofus*, tufa: Sp. *toba:* F. *tuf*]: originally a light porous rock composed of cemented scoriæ and ashes ejected from a volcano; now any porous vesicular compound. TUFACEOUS, a. *tū-fā'shŭs*, pertaining to or consisting of tufa, or resembling it.

TUFT, n. *tŭft* [F. *touffe*, a tuft, clump of trees: Ger. *zopf*, a tuft of hair: Icel. *toppr*, the summit, tuft of hair: W. *twb*, a round lump; *twff*, a tuft (see also TOP 1)]: a collection of small things forming a knot or bunch, as of threads or feathers; a clump; a cluster; a head of flowers; a little bundle of leaves, hairs, or the like: V. to adorn with a tuft or with tufts. TUFT'ING, imp. TUFT'ED, pp.: ADJ. growing in tufts or clusters; adorned with a tuft or tufts. TUFTY, a. *tŭf'tĭ*, abounding with tufts; growing in clusters. TUFT-HUNTER, one who is very assiduous in courting the acquaintance of persons of rank—the phrase originating from the circumstance of young noblemen being entitled to wear gold tassels in their caps at Oxford University.

TUFTS, *tŭfts*, COTTON: 1734, May 30–1815, Dec. 8; b. Medford, Mass.: physician. He graduated at Harvard 1749; studied medicine, and settled in Weymouth to practice; was an original member of the State Medical Soc., and a founder of the Acad. of Arts and Sciences; became a member of the general court, state councilor, state senator, and member of the convention that ratified the federal constitution; and was author of the instructions to the representatives of Weymouth to oppose the Stamp Act.

TUFTS COLLEGE: educational institution at College Hill, Medford, Mass.: it is controlled by the Universalist churches of the United States. T. C. was chartered by the legislature of Mass. 1852, and was opened for reception of students 1855. In 1897–8 it had 80 professors and instructors. The value of grounds and buildings was $500,000; productive funds $1,684,647, total income $95,000; vols. in library 33,000. The theol. school of T. C. was opened 1869; it had (1889) 5 resident professors and instructors, 35 students. The Rev. Elmer Hewett Capen, D.D., is pres. both of the college and of the theol. seminary. In the engineering dept. of T. C. 9 students graduated 1890; in the theol. school 8; in the classical dept. 13; no. of students in the three depts., 152. There are several scholarship funds of $2,000 each. The Rev. Dr. A. A. Minor made a gift of $40,000 to T. C. (1891) for a building to be used for the theol. school. The gifts of Phineas T. Barnum to T. C. during his life amounted to $100,000; by his last testament he bequeathed $40,000 to be applied to the Barnum Museum of Nat. History in the college.

TUG, n. *tŭg* [Ger. *zug*, a pull, a tug: Icel. *tog*, a tow-rope: O. Dut. *tucken*, to allure, to entice: AS. *teon;* Ger. *ziehen;* Goth. *tiuhan*, to draw (see also Tuck 1)]: a pull with strong effort; a small steam-vessel used to tow or pull ships out of or into a harbor or dock; something used in tugging or pulling; one of the straps or chains by which a horse draws a vehicle; a trace: V. to pull or draw with considerable effort; to pull with continued exertion; to labor hard; to drag. **Tug′ging**, imp.: N. laborious pulling. **Tugged**, pp. *tŭgd.* **Tug′gingly**, ad. *-lĭ.* **Tug′ger**, n. *-gėr*, one who tugs. **The tug of war**, the supreme effort in any struggle; also, a game in which the ends of a rope are held by rival parties who try to draw each other over a line.

TUILERIES, *tü-ĕl-rē′*, **Palace and Gardens of the**: buildings and pleasure-grounds in the middle of Paris, on the right bank of the Seine, with Rue de Rivoli along their n. side, and Quai des Tuileries to the s. Here, 1342, a certain Pierre des Essarts possessed a pleasure-house, called the *Hôtel des Tuileries* from its being built in a locality where were several tile-works (*tuileries*). Francis I. bought this property from the Sieur de Villeroy, as a present to his mother, the Duchess of Angoulême. It was afterward chosen by Catharine de' Medici as the site of a new palace instead of that of Tournelles, and the building was begun 1566. Originally, the palace consisted of only the square structure in the centre; but was greatly enlarged by Henry IV., Louis XIII. and XIV., and Napoleon I.; and received further improvements at the hands of Napoleon III. Louis XIII. was the first sovereign who resided at the T. Louis XIV. stayed there for only a short time, and then established himself at St. Germain; Louis XV. and XVI. lived at Versailles. In 1793 the national convention held its sittings in the T.; and Bonaparte chose it for his official residence. It was occupied by Louis Philippe, was the imperial residence of Napoleon III., and was burned by the Commune 1871. The side-wings have been restored.

TUILYIE, or **Tuilzie**, or **Tulye**, n. *tôl′yĕ* [OF. *touiller*, to mix in a confused manner]: in *Scot.*, a quarrel; a broil: V. to quarrel; to squabble.

TUITION, n. *tū-ĭsh′ŭn* [L. *tuitĭō* or *tuitĭōnem*, a taking care of, a guarding—from *tuĕor*, I look at or guard]: *originally*, superintending care, as over a pupil or ward—hence, instruction; the act or business of teaching. **Tui′tionary**, a. *-ėr-ĭ*, pertaining to tuition.

TUKE, *tūk*, **William**: philanthropist: 1732–1822, June 6; b. York, England. He founded a retreat for insane persons at York—the first asylum in England in which humanitarian and scientific principles were applied in the treatment of mental disorders. T. made a bold departure in his treatment of the insane without excessive restraint, and in discarding copious bleedings and depressing medicines for their malady. He was a member of the Soc. of Friends, which soc. also controlled the York Retreat.

TU'LA: see TOULA.

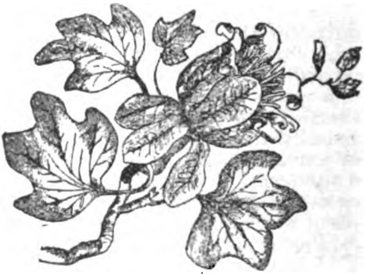
TU'LA-METAL: peculiar alloy of silver, with small proportions of copper and lead; manufactured at the imperial metal-works at Tula, or Toula, in Russia, and used for making the famous Russian snuff-boxes, erroneously said to be of platinum.

TULANE, *tû-lān'*, PAUL: philanthropist: 1801, May—1887, Mar. 27; b. near Princeton, N. J. He settled in New Orleans as a merchant 1822, and was in active business till 1856, when he retired from commercial life, possessed of a considerable fortune. He changed his residence to Princeton, N. J., 1873, still retaining a warm regard for New Orleans. He conveyed his estate there 1882 to trustees for the foundation of an educational institution. This and subsequent gifts amounted to about $1,100,000. The institution thus founded is the T. University, founded 1884, and having (1889) 42 professors and instructors, and 782 students in all depts., of whom 500 were boys and 282 girls. T. in his life often expressed the purpose of bequeathing much of his residuary estate to the univ. trustees, but he died intestate, and the property went to his heirs-at-law.

TULCHAN, n. *tŭl'chăn*, the *ch*, as in *loch*, is guttural [Gael. *tulachan*, a sham calf or bishop]: in *Scot.*, an undressed calf's skin stuffed with straw, and set beside a cow to cause her to give her milk. A TULCHAN BISHOP, in *Scot.*, in Reformation times, one who received the episcopate on condition of assigning the temporalities of the see to a secular person.

TULIP, n. *tū'lĭp* [F. *tulipe;* It. *tulipa*, a tulip—from Pers. *dulband*, a turban—from its likeness to a turban]: a bulbous plant cultivated for the beauty and variety of its flowers, of the genus *Tulĭpa*, ord. *Liliācĕæ;* the tulip of the gardens is *Tulĭpa Gesnerĭāna.*—The *Tulip* has an inferior bell-shaped perianth, of six distinct segments, without nectaries; a sessile three-lobed stigma, a three-cornered capsule, and flat seeds. The bulb is fleshy, and covered with a brown skin. About 80 species of T. are known, mostly natives of warmer parts of Asia. The most famous of all Florists' Flowers is the GARDEN T. (*T. Gesneriana*), 18 in. to 3 ft. high, with smooth stem, bearing one erect, large flower; the leaves ovate-lanceolate, glaucous, and smooth. The T. is a native of the Levant; was brought from Constantinople to Augsburg by Conrad Gesner 1559, and was rapidly diffused throughout Europe. The varieties in cultivation in Europe and America are innumerable. For the tulip mania of the 17th c., in Holland, see FLORISTS' FLOWERS. The T. is still sedulously cultivated in Holland, especially at Haarlem, whence bulbs are largely exported. It is prized merely for the size and beauty of its flowers; its odor being not very pleasant. Tulips succeed best in a light, dry, and somewhat sandy soil. Bulbs are planted in the end of Oct. or beginning of Nov., and the flowers are produced early in summer. Tulips are propagated by offset bulbs, and new varieties are raised from seed.—Another species of T. cultivated in gardens is the **Sweet-scented** T., or **Van Thol** T. (*T. suaveolens*), which has a short, hairy stem, and yellow or red flowers, inferior to those of the common Garden T. in beauty, but prized for fragrance and for appearing more early in the season: it is cultivated often in pots in windows. It is a native of s. Europe. The **Wild** T. (*T. sylvestris*) is a native of many parts of Europe and Asia: it is common in the woods and vineyards of Germany and s. Europe. It has a slender stem, narrow lanceolate leaves, and a somewhat drooping, fragrant, yellow flower. It develops offset bulbs at the end of fibres thrown out from the root, at some distance from the parent plant. Its bulbs are eaten in Siberia, though bitterness and acridity characterize the bulbs of this genus.

TU'LIP-TREE (*Liriodendron tulipifera*): beautiful tree of nat. ord. *Magnoliaceæ*, native of the United States; having a stem sometimes 100–200 ft. high and 9 ft. thick in the w. states. The leaves are roundish, ovate, with two lobes near the base and two at the apex, truncated, with a broad shallow notch between. The flowers are solitary at the extremities of the branchlets; they resemble tulips in size and appearance, and are greenish yellow, marked with orange. The scale-like pistils cohere in a cone, separating when ripe, and falling away like the key-seeds of the maple. The bark has a bitter, aromatic taste, and, like that of all the *Magnoliaceæ*, contains a bitter principle, *Liriodendrin*. It has been used as a substitute for Peruvian Bark in intermittent fevers, and is a good tonic. The T.-T. is found from s. New England to Ill. and south. It is one of the most beautiful ornaments of pleasure-grounds, wherever it grows and flowers well. It is now plentiful in many parts of s. Europe. In some parts of the basin of the Mississippi, it forms considerable tracts of the forest. The heart-wood is yellow, the sap-wood white. The timber is easily wrought, takes good polish, and is much used for many purposes.



Tulip-tree (*Liriodendron tulipifera*).

TULLAMORE. *tŭl-la-mōr':* one of the capitals, and now the assize town, of Kings county, Ireland; on the Grand canal, 59 m. w.s.w. of Dublin, with which it is connected by rail. It stands on what may be called a fertile island of the great Bog of Allen (q.v.), and has within recent years risen into importance. Its central position gives it command of the inland traffic of a large district. A trade in grain and agricultural produce is carried on with Dublin by the canal. There are a large distillery and extensive breweries and several tanneries; also a busy cattle-trade. The schools, conventual and national, are excellent, and numerously attended. There are a jail and court-house, barracks, Rom. Cath. and Prot. churches, etc. A weekly newspaper is published. Within a few miles is the extensive Jesuit college of Tullabeg, which receives above 150 pupils.—Pop. (1891) 4,522, mostly Rom. Catholics.

TULLE, n. *tôl* [F. *tulle*—said to be so called from the town of *Tulle,* in France]: a delicate kind of silk net or lace, used for women's veils, for dressing caps, etc.

TULLE, *tül:* town of France, dept. of Corrèze; at the embouchure of the Solane into the Corrèze. It is for the most part poorly built, but has some fine promenades, excellent quays and bridges, Gothic cathedral, episcopal palace, theological seminary, communal college, industrial college, public library, and theatre. One of the suburbs of T., called Souillac, is a national milit. manufactory, and the town is otherwise notable for manufactures of leather, paper, cards, lace (known as *Point de Tulle*), liqueurs, and iron-mongery. Some say that T. owed its origin to a Roman fort called *Tutela;* and in the vicinity are certain undoubted Roman remains: others think it dates from the 4th c.—Pop. (1891) 18,964.

TULLOCH, *tŭl'ok,* JOHN, D.D.: 1823–1886, Feb. 13; educator and author: b. at Bridge of Earn, Perthshire, Scotland. He was educated at the Univ. of St. Andrews; was ordained a clergyman of the Church of Scotland (Presb.) 1845; studied philosophy and speculative theology in Germany; became parish clergyman at Kettins, Scotland, 1849; and from 1854 till his death was prof. of divinity and principal of St. Mary's College, St. Andrews. He visited the United States 1874.—T. was author of many works, including *Leaders of the Reformation, English Puritanism and Its Leaders,* and *Rational Theology and Christian Philosophy of the Seventh Century.* The last is his most important work. His writings are valuable especially for their sketches of leaders in the great movements in the church—such as the Reformation and Puritanism. Next to Dr. Robert Lee, T. has done more than any other man to broaden the Scottish national church—insisting on the necessity of comprehensiveness of varying evangelical opinions and tendencies; and on liberty in all subscriptions to creeds, as binding not in all details but only as to general substance and spirit. The evident need of this provisional step in the direction of liberty has since indicated to many minds the fact that creeds cannot be relied on as the sure defense of doctrine.

TULLUS HOSTILIUS, *tŭl'lŭs hŏs-tĭl'ĭ-ŭs:* third legendary king of Rome: d. B.C. 638 (reigned B.C. 670–638). According to the legends (doubtful authority for dates, events, etc.), he succeeded Numa Pompilius on the throne; and made the famous arrangement, by the combat of the Horatii with the Curiatii, for decision of the question of supremacy between Rome and Alba, which resulted in favor of Rome: he conquered Fidenæ and Veii; destroyed Alba, and removed the inhabitants to Rome, giving them Mount Cælius to dwell on; and carried on war against the Sabines. As he grew old, he became more pacific, and turned to the worship of the gods; but his negligence had too long provoked them to be forgiven; so that, when he wished to inquire of Jupiter Elicius, the god consumed T. H. and his house with fire.—According to Niebuhr, Arnold, etc., glimpses of a distinct personality appear in this legend of T. H., by which it makes nearer approach to history than do the legends of Romulus and Numa, which are merely personifications of the two principal stages of a nation's growth. T. H. may be taken as shadowing the first extension of Roman territory beyond the city.

TUMBLE, n. *tŭm'bl* [F. *tomber;* It. *tombolare;* Icel. *tumba*, to fall: AS. *tumbian*, to tumble, to dance: Dut. *tuimelen;* Sw. *tumla;* Dan. *tumle*, to tumble]: a fall; V. to fall; to come suddenly to the ground; to rumple; to toss; to fall in quantities and tumultuously; to throw down; to roll or turn over; to throw somersets and perform other contortions, especially said of acrobats. **TUM'BLING**, imp. *-blĭng:* ADJ. rolling: N. the act of falling; the performance of certain actors in a circus. **TUMBLED**, pp. *tŭm'bld.* **TUM'BLER**, n. *-blėr*, one who amuses the public by placing himself in various postures; a kind of latch in a Lock (q.v.); a drinking-glass—originally with pointed or round bottom so that it could not be set down without falling—hence it was necessary to empty it first; in modern usage, a drinking-glass without a stem or foot; a variety of the domestic pigeon which tumbles or turns over in its flight; a kind of dog. **TUM'BLERFUL**, n. a quantity sufficient to fill a tumbler.

TUMBREL, n. *tŭm'brĕl*, or **TUM'BRIL**, n. *-brĭl* [OF. *tomberel;* F. *tombereau*, a dung-cart—from *tomber*, to fall (see TUMBLE)]: a covered cart used to convey tools, ammunition, etc., in a military train; a cart or truck which may be tumbled or tilted up; a dung-cart; a ducking-stool; a frame or crib, made of willows and the like, for containing hay and other food for sheep.

TUMEFY, v. *tū'mĕ-fī* [F. *tuméfier*—from L. *tumefacĕrĕ*, to cause to swell or puff up—from *tumĕō*, I swell; *faciō*, I make]: to cause to swell; to swell; to rise in a tumor. **TU'MEFYING**, imp. **TU'MEFIED**, pp. *-fīd.* **TU'MEFAC'TION**, n. *-făk'shŭn* [F.—L.]: act of swelling; a swelling; a tumor. **TUMESCENT**, a. *tū-mĕs'sĕnt*, being or growing tumid. **TUMES'CENCE**, n. *-sĕns*, tumefaction.

TUMID, a. *tū'mĭd* [L. *tumĭdus*, swollen, protuberant—from *tumĕō*, I swell]: swollen; inflated or distended; protuberant; swollen in sound or sense; absurdly sublime; pompous; bombastic. **Tu'midly**, ad. *-lĭ*. **Tu'midness**, n. *-nĕs*, or **Tumidity**, n. *tū-mĭd'ĭ-tĭ*, the state or quality of being tumid.

TUMOR, n. *tū'mėr* [F. *tumeur*—from L. *tumor* or *tumōrem*, a swelling—from *tumĕō*, I swell]: a swelling or enlargement of any part of the body caused by morbid growth. **Tu'mored**, a. *-mėrd*, swelled; distended.—In a general sense, any swelling may be called a tumor; more specifically, the word is used as a synonym for neoplasm or new growth, meaning a development of a mass of cells, without any direct inflammatory cause, and performing no physiological function. Tumors are naturally classified according to their structure, which corresponds to that of normal tissues, all forms of normal tissues being represented in tumors, excepting yellow elastic tissue. Thus the essential difference between the cells of a tumor and of a normal organ is that the former are not properly combined with cells of other kinds so as to perform useful roles, and that they tend to proliferate to an inconvenient or dangerous degree.

Cysts are usually included among tumors, though not exactly fulfilling the modern definition. They consist of a wall, usually of fibrous tissue, inclosing a soft or liquid mass. A wen is a 'retention cyst' caused by a stoppage of a sebaceous gland, the unctuous sebaceous secretion accumulating so as to form a tumor even as large as a child's head. Ovarian cysts, which may contain 50 quarts, are formed by a somewhat similar accumulation. They are almost always multilocular (that is, subdivided into many chambers) and filled with gelatinous material. Large unilocular cysts, filled with clear watery serum, may form in the layers of the broad ligament of the uterus and may be mistaken for ovarian cysts. Dermoid cysts, most commonly found in the ovary, contain imperfectly formed bone, sebaceous material, teeth, hair, etc., and are supposed to be due to the inclusion of misplaced embryonal cells in a developing organ.

The names of true tumors are formed by adding the Greek suffix *-oma* (swelling) to the name of the tissue represented. Thus we have fibroma, of fibrous tissue; myxoma, of mucoid tissue, represented normally by the vitreous humor of the eye; glioma, of the peculiar delicate connective tissue of the spinal cord and brain; lipoma, of fatty tissue; osteoma, of bony tissue; chondroma, of cartilaginous tissue; angioma, consisting of blood vessels of various sizes; lymphangioma, of lymphatic vessels; lymphoma, of lymphoid tissue; neuroma, of true nerve tissue, though most so-called neuromata are fibroid tumors; papilloma, or wart, of the combined tissues of a papilla of the skin; adenoma, of glandular epithelium. All the foregoing are essentially *benign*, that is, not tending to a fatal issue except from some such accident as pressure on the air passages or rupture and hemorrhage or breaking down into an abscess with resulting septicæmia, etc. Corresponding somewhat to lymphoma, are various forms of sarcoma; corresponding to papilloma, but differing in the tendency to grow internally rather than externally, is the epithelioma or cancer of external epithelium; and to the adenoma is the true glandular carcinoma or cancer. These three forms of neoplasm are spoken of as malignant, from their tendency to rapid growth and exhaustion of vitality. It must be borne in mind, however, that a tumor differs from an organ and a malignant tumor from a benign growth, not so much from any obvious difference in the cell constituents as in the tendency to form useless and wasteful masses of flesh.

All tumors necessarily involve some admixture of supporting, fibrous, tissue, but there is often a truly mixed tumor. Thus myxoma and neuroma are seldom of pure type, but are more correctly described as myxo-fibroma or neuro-fibroma. Gliomata are, by some, considered a form of sarcoma, though it is doubtful whether the fatal tendency manifested by them is intrinsic or due to the accident of location. Osteo-sarcoma is a common combination, and the ordinary scirrhous cancer might, analogously, be termed a fibro-carcinoma. In general, fibrous and fatty tumors are the least dangerous, and the more fibrous tissue a malignant tumor contains, the slower is its growth. Sarcoma is sometimes said to undergo fibroid development and to lose its malignant character altogether.

The cause of tumors is almost unknown. Dermoid and some other cysts, as well as the rare tumor representing striped muscle, are congenital. Epithelioma and carcinoma are not often found before the age of forty, sarcoma is rather a disease of childhood. Epithelioma, especially of the face, is often traced to repeated irritation of a sore or to malignant degeneration of a wart. It is possible that malignant tumors have a germ origin. Treatment, of all forms of tumors, may be summed up in the one word *removal.* The indication for removal is especially urgent in malignant disease, when the only hope is from prompt and radical operation.

TUMP, n. *tŭmp* [W. *twmp*, a round mass or heap, a hillock]: a little hillock; a knoll: V. to throw up the earth around a tree so as to form a hillock. **Tump'ing**, imp. **Tumped**, pp. *tŭmpt*.

TUMULAR: see under **Tumulus**.

TUMULT, n. *tū'mŭlt* [F. *tumulte*—from L. *tumultus*, disturbance, agitation—from *tumĕō*, I swell: It. *tumulto*]: the commotion of a multitude of people, with great noise and uproar; wild disorder; uproar; disturbance. **Tumul'tuary**, a. *-tū-ér-ĭ*, disorderly; agitated; confused and restless. **Tumul'tuariness**, n. *-nĕs*, lawlessness; turbulence. **Tumul'tuous**, a. *-tū-ŭs*, conducted with confusion and noise; disorderly; turbulent; lawless. **Tumul'tuously**, ad. *-lĭ*. **Tumul'tuousness**, n. *-nĕs*, the state of being tumultuous; disorder. **Tumultuous assemblage** (see **Riot**).—**Syn.** of 'tumult': commotion; uproar; ferment; turbulence; confusion; bluster; hubbub; noise; stir; brawl; riot; bustle; clamor; outcry; exclamation; shouting; bawling;—of 'tumultuous': boisterous; irregular; noisy; confused; violent; agitated; disturbed; seditious; riotous.

TUMULUS, n. *tū'mū-lŭs* [L. *tumŭlus*, a raised heap—from *tumĕō*, I swell: It. *tumulo*]: a mound or hillock, anciently raised to mark a place of burial; a barrow (see **Sepulchral Mound**). **Tu'mular**, a. *-lér*, or **Tu'mulary**, a. *-lér-ĭ*, consisting of a heap; formed in a heap or hillock. **Tu'mulous**, a. *-lŭs*, or **Tu'mulose**, a. *-lōs*, full of hillocks. **Tu'mulos'ity**, n. *-lŏs'ĭ-tĭ*, hilliness.

TUN, n. *tŭn* [F. *tonne*; Icel. and OHG. *tunna*, a cask: the same word as **Ton**, which see]: a large cask: a measure consisting of 4 hhd. or 2 pipes; an old measure of capacity equal to 252 gallons (of 231 cubic inches); in old ale and beer measure the tun was equal to 216 gallons (of 282 cubic inches); a tun of whale-oil = 252 gallons, and is said to weigh 17 cwt. and about 80 lbs: V. to put into large casks. **Tun'ning**, imp. **Tunned**, pp. *tŭnd*. **Tun-bellied**, a. having a large belly swelling out like the middle of a cask. To **tun up**, to put liquor into a tun.

TUNBRIDGE, *tŭn'brĭj*: market-town of England, co. of Kent; on the Medway, 27 m. s.e. of London. The castle, on the Medway, near the entrance to the town, dates from the close of the 13th c., has a gate-tower of great size, richly ornamented, and is at present occupied as a military training school. The parish church is a large and old but sadly disfigured building. The chief establishment in the town is the grammar school; to it are attached 16 exhibitions of £100 a year, tenable at either Oxford or Cambridge Univ., besides 12 lesser exhibitions. The manufacture of toys and turned and inlaid articles of wood (see **Tunbridge-ware**) is a specialty.—Pop. (1871) 8,209; (1881) 9,340; (1891) 10,123.

TUN'BRIDGE-WARE: articles of wood, such as work-boxes, ring-boxes, desks, etc., covered with a veneer cut from a solid mass of small pieces of wood, of square and triangular shape, built up in geometric patterns, and carefully glued together; extensively manufactured at Tunbridge and Tunbridge Wells. This trade was formerly much greater than at present.

TUN'BRIDGE WELLS: famous English inland watering-place, the oldest but one in the country (Bath—q.v.—being the oldest); chiefly in Kent, partly in Sussex; 46 m. by rail s.e. of London, 5 m. s. of Tunbridge. The town, which is rapidly extending, occupies the head and slopes of one of the valleys of the Weald, and has in general a s.w. aspect, commanding very fine views. The three centres of population are Mounts Ephraim, Sion, and Pleasant, separated by a large common and cricket-ground. The town is charmingly irregular in plan; and much of it is laid out in districts called 'parks' with villas and mansions. The Wells, discovered 1606 by Lord North, are at the end of a promenade called the *Pantiles*. The waters are chalybeate. In the vicinity are charming rides and walks. The 'season' is June—Sep. T. W., a favorite resort for Londoners since the time of Queen Anne, reached its height as a fashionable resort toward the end of the 18th c.; and still attracts throngs of visitors, though not so specially a resort of London society (see Thackeray's *Virginians*).—Pop. (1881) 24,309; (1891) 27,895.

TUNDING, n. *tŭn'dĭng* [L. *tundo*, I beat]: in the *slang of Winchester School*, England, a beating with sticks given by a monitor to a school-fellow for a breach of discipline.

TUN-DISH, n. *tŭn'dĭsh:* OE. for a *funnel.*

TUNDRAS, n. *tŭn'drăs* [Fin. *tuntur*, mossy flat]: swampy tracts of land, covered partly with a thick felt of bog-moss, partly with a dry snow-white covering of reindeer-moss and varieties of lichens; bordering the Arctic Ocean in Siberia, and stretching w. from the Ural along the n. of Europe. It is only the reindeer that renders this frightful waste habitable for the wandering hordes of Samoyeds, who hunt the furred animals as well as the swans and wild geese which in summer flock hither in vast numbers. These polar steppes, however, can be trodden only in winter, when the whole region is one sheet of frozen soil and ice. In summer, when the surface thaws, the greater part of the region becomes an inaccessible morass, except a portion along the n. coast of Siberia, which retains its snow covering throughout the year.—See Seebohm, *Siberia in Europe* (1880); *Siberia in Asia* (1882); and German works by Schrenk and Von Wrangel.

TUNE, n. *tūn* [F. *ton*, tone, tune—from L. *tonus;* Gr. *tonos*, the sound or tone of an instr.: the same word as TONE]: a series of musical notes of a particular measure and of a given length; a melody; a short musical composition; the proper relation of notes and intervals to each other; the state or capacity of giving the due sounds; fit temper or humor; disposition; harmony; concert of parts; state as to order: V. to put into a proper state, as an instr., for producing the proper musical sounds; to put into any proper state or order so as to produce the proper effect; to form one sound to another; to sing harmoniously. **Tu'ning**, imp.: N. the operation of adjusting a musical instr. in order that its various musical sounds may be produced as correctly as possible. **Tuned**, pp. *tūnd*. **Tunable**, a. *tū'nă-bl*, that may be put in tune; in *OE.*, musical; melodious. **Tu'nably**, ad. *-blĭ*. **Tu'nableness**, n. *-bl-nĕs*, state of being tunable. **Tuneful**, a. *tūn'fûl*, harmonious; melodious. **Tune'fully**, ad. *-lĭ*. **Tune'less**, a. *-lĕs*, unmusical; not harmonious. **Tuner**, n. *tū'nėr*, one whose occupation is to tune musical instrs. **Tuning-fork**, a steel instr. having two flat prongs, which by their vibrations, when struck, or pressed together and then suddenly set free, produce a particular musical note, used for regulating the Pitch (q.v.) of instrs., and also of the human voice; tuning-forks are usually tuned in C, as in Great Britain, or in A, as in Germany. **Out of tune**, not in a proper state for use; not in a proper temper or disposition. **To the tune of**, *familiarly*, to the amount of, as, 'he was fined *to the tune of* forty dollars.' **Tuneful Nine**, the nine Muses.

TUNGSTEN, n. *tŭng'stĕn* [Sw. *tungsten*, heavy stone—from *tung*, heavy; *sten*, a stone]: elementary body, a hard brittle metal of light steel-gray color and brilliant metallic lustre, which gives great hardness and increased magnetic power when mixed with steel. **Tungstenic**, a. *tŭng-stĕn'ĭk*, pert. to tungsten. **Tung'stic**, a. *-stĭk*, obtained from or formed of tungsten. **Tungstic acid**, acid composed of one equivalent of tungsten and three of oxygen. **Tung'state**, n. *-stāt*, a salt of tungstic acid and a base.—*Tungsten* (symb. W, at. wt. 184, sp. gr. 17·4) is a rare metal, derived chiefly from Wolfram (q.v.) (whence its symbol W), which is a tungstate of iron and manganese, and likewise occurs in Scheelite, which is a tungstate of calcium. It is unnecessary to describe the means of separating the metal, which may be finally obtained either as a dark-gray powder or in heavy iron-gray bars, which are very hard, and difficult of fusion. Aqua regia and nitric acid convert it into tungstic oxide. When 10 parts of this metal are alloyed with 90 of steel, a mass of extraordinary hardness is obtained.

T. forms three compounds with oxygen: (1) a dioxide, WO_2, which is obtained in a brown powder by heating tungstic acid to low redness in a current of hydrogen, and which does not form salts with acids; (2) a trioxide, known as *Tungstic Oxide*, WO_3; (3) a pentoxide, W_2O_5. Hot solutions of alkaline tungstates, when neutralized with an acid, yield a yellow precipitate—*tungstic monohydrate*, or *tungstic acid*, H_2WO_4. Tungstic acid dissolves easily in alkalis. *T. disulphide*, WS_2, is obtained in soft black aciform crystals by igniting T. with sulphur. The *Trisulphide*, WS_3, is formed by dissolving tungstic acid in ammonium sulphide, and precipitating with an acid. It unites freely with the basic metallic sulphides, forming the *thiotungstates*.

TUNGÛS, *tŭn-gôs′:* ethnographic group of the Turanian family, at present n. and e. of the Mongol group, inhabiting the vast plains stretching s. from the icy sea of Siberia, between the Yenesei and the Lena, the n. slopes and valleys of the Great Altaĭ, and the hilly uneven tract between the upper Amur and the Lena. The chief peoples included under this group are the Niujin, the Dăurians, Tshapodshirs, Manchûs (in the s.e.), and Lamûts (on the e. coast). In the n. they have intermingled with the Samoyedes; in the w. with the Ostiaks, whose territory is on the other side of the Yenesei; and in the s. the Manchûs have been the rulers of China since 1643. Divided politically between Russia and China, the s. portion are Buddhists, while the tribes further n. mostly practice Shamanism (q.v.), a few having, by strenuous exertions of the Russian govt., been induced to profess Christianity. The T. are partly nomad and wandering, partly agriculturists and settled rearers of cattle. The first of these are commonly classed according to the districts that they prefer to dwell in, as T. of the forests, or T. of the steppes: the former being shepherds, hunters, or fishers; the latter exclusively shepherds. The steppe T., again, are divided according to the animals of draught that they employ, into the reindeer-T., the horse-T., and the dog-T. The T. are in general robust and lively, with flat visage and small eyes, the latter characteristics, however, being much less prominent in them than in the Kalmucks. A portion of the Chinese Tungûs constitute the Ssolon nation, famed as warriors in Chinese modern history. The Tshapodshirs tattoo their faces.

TUNGUSIC, a. *tŭn-gô′sĭk:* of or pertaining to the Tungus, or the languages (Ural-Altaic) spoken by the Tungûs.

TUNHOOF, n. *tŭn′hôf* [see **ALEHOOF**, under **ALE**]: *alehoof* and *tunhoof*, old popular names of ground-ivy, the leaves of which were formerly employed to preserve ale before hops came into use.

TUNIC, n. *tū′nĭk* [L. *tunĭca*, an under-garment of the Romans worn by both sexes: It. *tunica:* F. *tunique*]: a long garment worn over the alb by an officiating clergyman in the Rom. Cath. Church; any loose frock or coat drawn in at the waist and reaching only a little way below it; a natural covering, as a seed-cover. **TUNICATED**, a. *tū′nĭ-kā-tĕd*, covered with a tunic or membrane; in *bot.*, covered by thin external scales, as the onion. **TU′NICLE**, n. *-nĭ-kl*, a little tunic; a natural covering; an eccles. garment, the same as the tunic or dalmatic. **TU′NICA′TA**, n. plu. *-kā′tă*, or **TU′NICARIES**, n. plu. *-kėr-ĭz*, a class of invertebrata, called also Ascidians, having the body inclosed not in a shell, but in a soft elastic tunic, perforated by two apertures and composed of a substance resembling Cellulose (q.v.). The T. are extremely numerous, and are found in all seas (see **ASCIDIA**: **SALPA**: **ZOOLOGY**). **TU′NICIN**, n. *-nĭ-sĭn*, the substance, allied to cellulose, of which the test of tunicata is composed.

TUNIS, *tū'nis:* French protectorate, formerly one of the Barbary States, in n. Africa, e. of Algiers; washed on its n. and e. coasts by the Mediterranean; touching the desert on the s., and Tripoli on the e.; greatest length n. to s. about 440 m.; average breadth 160 m.; about 45,000 sq. m. Pop. (1894) 1,500,000, mostly Bedouins, Arabs, and Kabyles.—The Atlas range traverses T. and terminates here. The n. coast is rocky and steep, with numerous bays, of which the largest is the Gulf of T.; and two of its promontories, Capes Blanco (*Rás-el-Abid*) and Bon, are the most northern in Africa. The e. coast is flat, sandy, and infertile, like that of Tripoli: it has two large gulfs, Hammamet and Cabes (*Syrtis Minor* of antiquity). The s. part of T. belongs to the desert steppe known as Belud-el-Jerid. There is only one fresh-water lake of much size, that of Biserta or Bensart, near the n. coast. No rivers are navigable. The longest is the Mejerdah (*Bagradas* of the ancients), the most important river in n. Africa, which flows generally n.e. about 300 m. into the Gulf of T. Other streams are the Ved-el-Milianah and the Ved-el-Kebir. There are several mineral springs in the country. The climate is fine, and the soil exceedingly fertile, so that, in spite of very poor agriculture, wheat, barley, maize, durra, pulse, olives, oranges, figs, grapes, pomegranates, almonds, and dates are abundantly produced. The culture of oil is extensive and very lucrative. Great herds of cattle are fed on the plains; the sheep are famous for their wool; and the horses and dromedaries are no less notable. The chief mineral products are sea-salt, saltpetre, lead ore, and quicksilver. In the vicinity of the sea-coasts, but chiefly in the cities of Tunis and Susa, there are some active industries. The total revenue (1894) was $4,646,200, expenditure $4,626,770. The value of the imports (1894) was $8,364,663; exports $7,386,558. The leading imports were cotton and metal goods, sugar, coffee, and clothing; the exports, olive-oil, cattle, wheat, barley, tan, sponges, and zinc ore. T. has in operation about 300 m. of railroad.

The predominant race is of Arabic descent, but there are many Berbers, especially in the interior. The territory corresponds nearly with that of ancient Carthage; and for a sketch of its pre-Christian history, see CARTHAGE: ROME: HANNIBAL: HAMILCAR: SCIPIO: JUGURTHA: ETC. Its subsequent fortunes, till 1575, are interwoven with the general fortunes of Barbary (q.v.); but in that year Sinan Pasha conquered and incorporated it with the Ottoman empire, and gave it a new constitution. The govt. was placed in the hands of a Turkish pasha, a divan or council, composed of the officers of the Turkish garrison, and the commander of the Janizaries. After a few years an insurrection of the soldiery broke out, and a new government was established, whose head was a 'Dey,' with very limited authority; the chief power being exercised at first by the military divan. Gradually, however, an officer with the title of 'Bey,' whose original functions had been confined to the collection of tribute and taxes, acquired supremacy over the other authorities, and finally obtained a kind of sovereignty, which Murad Bey succeeded in making hereditary. The family of Murad Bey ruled in T. for 100 years, and gained undesirable renown by their conquests on the mainland and their piratical enterprises against Christian powers at sea. During the 18th c., T. became tributary to Algiers. About the beginning of the 19th c., Hamuda Pasha threw off the Algerian yoke, subdued the Turkish militia, and created a native Tunisian army; in consequence of which T. virtually attained independence. Subsequent rulers, Achmet Bey (1837), Mohammed Bey (1855), and Mohammed Sadyk Bey (1859), have been liberal, enlightened, and reforming. By a firman of 1871, the sultan renounced the tribute formerly exacted, and fixed the relations of the Sublime Porte to Tunis. With the proclaimed purpose of chastising the Kroumir tribes, who had made incursions into Algerian territory, France sent an expedition to T. in the spring of 1881; but the result was that under compulsion the bey signed a treaty (1882) giving France extensive power, and practically making T. a French dependency or protectorate. T. is still nominally under the authority of the bey; but a French minister resident really controls affairs. The Porte protested in vain; but persistent insurrections against French authority necessitated tedious and extensive military operations.—See works on T. by Hesse-Wartegg, Reid, and Broadley (all 1882).

TU'NIS: city, cap. of the regency of T.; on a small lagoon, near the s.w. extremity of the Lake of T., about 3 m. from the ruins of ancient Carthage. The streets are narrow, unpaved, and dirty; but the bazaars are well furnished, and many of the mosques are really splendid. All the mosques are closed against Christians. The ceilings of the bey's palace glitter with gold and carmine and azure: the court-yard is paved with marble and surrounded by arcades supported on marble columns. The citadel, begun by Charles V. and finished by Don John of Austria, is interesting from its collection of old arms, and was formerly the great slave-prison of Tunis. There are also Rom. Cath. and Greek churches, Jews' synagogues, an Italian theatre, and large barracks. T. is the commercial centre of the state, and, having been made directly accessible to ocean-going vessels by the cutting of a ship-canal (1893), more than 80 per cent. of the total imports pass through it. T. has many industries; among the chief are making of silks and woolens—e.g., shawls, tapestries, mantles, burnooses, caps, turbans, colored cloths; also leather, soap, wax, and olive-oil.—Pop. (1891) 153,000, of whom 40,000 are Europeans, and the remainder Moors, Arabs, negroes, and Jews.

The lagoon or Lake of T. is shallow, and communicates with the *Gulf of T.*, an inlet of the Mediterranean, by a narrow strait called the Goletta. The Gulf of T. is 45 m. broad at the entrance between Cape Bon and Cape Farina, and extends inland 30 m. The anchorage is good.

TUNISIAN, n. *tū-nĭs'ĭ-ăn:* a native of *Tunis*, in the n. of Africa: ADJ. of or pertaining to *Tunis*.

TUNKERS, *tŭng'kėrz*, often called **DUNKARDS**, *dŭng'kėrdz;* but terming themselves simply Brethren, or The Brethren: religious sect, occupying settlements in New England, N. Y., Penn., Ohio, Ind., and other middle and s. states. They are nowhere numerous, and are chiefly agricultural people. They profess that their association is founded on the principle of brotherly love. The name T.—from the German, signifying Dippers, and due to their dipping in baptism—is commonly, by corruption, pronounced and written *Dunkards.* In the vicinity of their settlements, they are known frequently as the *Harmless People.* They derive their origin from a small village on the Eder in Germany, but have been an exclusively American sect since the beginning of the 18th c., when they all emigrated to America. They reject infant baptism, and have no ministers specially devoted to the ministry as a profession. Every brother is allowed to stand up in the congregation and exhort; and when one is found particularly apt to teach, he is ordained by laying on of hands with fasting and prayer, and is expected to devote himself in some measure to the ministry, though without any stipend or pecuniary reward, even if his own crops should suffer by his neglect of them. Deacons and deaconesses are appointed. Like the Quakers, they use great plainness of dress and language; they refuse to take oaths or to fight; and they will not go to law. They celebrate the Lord's Supper, and accompany it with love-feasts, washing of feet, the giving of the right hand of fellowship, and the kiss of charity—all which observances they regard as scriptural. They anoint the sick with oil in order to their recovery, depending on this unction and prayer, instead of on medicine. They generally believe in the doctrine of universal salvation; but it is not a tenet of the sect. They do not insist on celibacy as an absolute rule; but they commend it as a virtue, and discourage marriage. They are industrious and honest, and universally held in good repute among their neighbors.

In 1882–3 the sect was divided into three branches, popularly known as the Conservative, Progressive, and Old Order Brethren, by reason of differences concerning the enforcement of the principle of non-conformity to the world.—The largest branch 1890 was the Conservative, which was represented in 28 states and 2 territories, had 720 organizations, owned more than 850 church edifices, rented 180 halls, had church property valued at $1,121,541, 61,101 members, and was strongest in Penn., Ind., and O. This branch maintains Sunday schools, schools for higher education, and missionary enterprises. The Progressive branch was represented in 15 states, chiefly Penn., Ind., and O.; had 128 organizations, owned nearly 100 church edifices, rented 37 halls, had church property valued at $145,770, and 8,089 members. They style themselves Brethren, and object to the name T. or Dunkards. The Old Order Brethren were believed to number about 3,000 members, but for years they have declined giving information about themselves.

TUNNAGE, n. *tŭn'nāj:* same as TONNAGE (q.v.).

TUNNEL, n. *tŭn'nĕl* [F. *tonnelle*, a trellised walk, a tunnel for entrapping partridges—from *tonne*, a tun, an arbor (see TON and TUN): comp. Gael. *tunna*, a tun, a vat: W. *twrnel*, a tub, a vat]: vaulted underground passage, often through a hill or under a river—so named from its resemblance to the interior of a tun or cask; in *OE.*, shaft of a chimney; passage for the smoke; a funnel; a net wide at the mouth and ending in a point: V. to form or cut a tunnel through or under; to hollow out in length; in *OE.*, to catch in a tunnel-net. TUN'NELLING, imp.: N. the operation of cutting a passage through a hill or under a river, and arching the roof. TUN'NELLED, pp. *-nĕld:* ADJ. having a tunnel formed or made through; penetrated or cut through, wholly or partially, as a hill. TUN'NELLERS, n. plu. *-ĕrz*, on *shipboard*, men who fill casks with water. TUNNEL-KILN, a lime-kiln in which coal is burned. TUNNEL-NET, in *OE.*, a net wide at one end and narrow at the other.

TUN'NEL: passage constructed under ground to carry a road, railway, canal, stream of water, or the like. Tunnelling, long in use for roads and aqueducts, has of late received great development for railways. In tunnels of considerable length, as the progress made by working from the two ends would be very slow, it is considered advisable to begin the work from many points of its length; for this purpose, shafts or pits are made at these points down to the level of the T. Of these shafts, some are temporary, kept open only till the end of the work; others are permanent, and for ventilation of the tunnel when in use. These shafts have to be large enough to allow the ascending and descending skips or buckets containing the excavated materials to pass one another. For the temporary shafts, an elliptical shape is found to give the greatest room for this purpose at the least expense. Square shafts are avoided, on account of the difficulty of excavating the corners in rocky strata. As the shaft descends, its sides are lined with timber-planks, supported by strong timber-frames, about 5 ft. apart. The permanent shafts, when the material is not of rock sufficiently solid, are lined with brick-work or masonry, built in lengths, as the shaft proceeds downward. These permanent shafts are generally made circular in section; and it is found better to place them 9 to 12 ft. from the side of the T., communicating with it by a small passage: this is convenient in the construction, also forms a useful refuge for workmen during the passage of trains. These shafts are usually about 10 ft. diameter. They are sunk a few ft. below the floor of the T., to form a pit for the collection of the water from the workings, which is hauled to the top in barrels or buckets. The raising of the excavated material and the water, and the lowering of building materials and of the workmen, is done by a windlass, a horse-gin, or steam-power, according to the extent of the work. On the completion of the shaft, the T. is begun in both directions from its bottom; and in ordinary rock it is found convenient to begin by making a small adit, or passage, along from shaft to shaft, through the whole length of the T.; this is made 6 or 7 ft. high, and the top of it placed at the level of the top of the tunnel. When this is completed, the correct centre line is marked out in it throughout the T.; the adit is then enlarged to the shape and size of the arch of the T., which is built in; and then the excavation is completed, and side-walls built up to underpin the arch. In cases where the material is soft and full of water, the full section of the T. is usually carried forward at once; and in such cases an invert has to be built between the side-walls, to withstand the upward pressure, as the pressure of soft material has the character of a fluid pressure, and presses the T. on all sides. The excavation is then done in lengths of about 24 ft., each firmly secured with poling-boards and timber bars, and securely shored; the centres are then set, and the brick-work built up. The timber bars are usually drawn out when the brick-work is carried up, and the holes that they leave are rammed tight with clay; but the bars have sometimes to be built in. When the quantity of water is very great, an adit is driven through the T., at the level of its floor, before the work is begun, to allow the water to run off.

Tunnels are generally made straight, but sometimes they are curved; this is done that they may pass under the lowest part of the hill; that the shafts may be as short as possible. They are frequently constructed on steep gradients; but as the trains experience some resistance from the air in passing through them, it is advisable not to make them so steep as the gradients in the open air.

The Mont Cenis T. (see CENIS, MONT) greatly surpassed any earlier enterprise of the kind. Its name is really a misnomer: the T. is a considerable distance from Mont Cenis, and the chief summit under which it passes is the 'Grand Vallon' (11,000 ft. high). This T. connects the railways of France and Italy, and is on the direct railway route from Paris to Turin. The length is 7 m. 4¾ furlongs. It is 434 ft. higher at Bardonnèche, on the Italian side, than at Modane, on the French side; therefore it is on a gradient of 1 in 45½ from Modane to the middle, and thence it falls 1 in 2,000 to Bardonnèche, this latter fall being sufficient to run off the water. The dimensions at Modane are 25 ft. 3⅝ inches wide at base, 26 ft. 2¾ inches at widest part, and 24 ft. 7 inches high—the arch being nearly semicircular. At Bardonnèche it is 11⅜ inches higher. It is all lined with stone-masonry, except at the Bardonnèche end, where the arch is brick. The work was begun 1857, and was at first done in the usual way, by hand; but 1861 the perforating machines described below were introduced on the Italian side, and two years later on the French side. 1863, June 30, the T. had been driven 5,400 ft., and the rate of advance was 9½ ft. per day. All efforts of the engineers to accelerate the work were for several years unavailing; and 1866, Oct., just one-half the distance, or 20,040 ft., had been pierced, showing the same constant rate of 9½ ft. per day. At this rate, the T. would not have been completed till 1872. By improved modes of working, and with a favorable change in the nature of the rock, the rate became greater toward the end, and the two parties met 1870, Dec. 25. The T. was formally opened 1871, Sep. A premium was to be paid by the French govt. to the Italian govt., which did the work, for each year by which a term of 25 years, counting from 1862, was reduced. The French govt. were also to pay $6,262,542 for construction of one-half the tunnel when completed. This great work, which appeared almost impracticable to ordinary methods of tunnelling by manual labor, was rendered practicable by machinery introduced by the engineers, Sommeiller, Grandis, and Grattoni. The great difficulty lay in the fact that, from the great height of the mountain, shafts were impracticable, and progress could be made only from each end. The ventilation also presented serious difficulties. Sommeiller perfected a small machine, weighing 6 cwt., which bored a hole 1¼ inch diameter and 3 ft. deep in 20 minutes; the time taken by two miners working by the ordinary method being two hours: 11 of these machines were placed on a movable support, and were capable of working at almost any angle. Three or four large holes were bored in the centre of the heading, and round these other holes of the ordinary size, in all 80 holes. The large holes were not fired, but were for the purpose of weakening the rock. The others were then charged and fired in succession and in detachments, beginning with those nearest the centre, and working outward. The machines were worked by compressed air acting, like high-pressure steam, on a piston in a cylinder; this air being compressed outside the T. by water-power acting on the hydraulic-ram principle, also by an air-pump; it was used at a pressure of five atmospheres above the atmospheric pressure, and was conveyed to the workings by a pipe 7⅝ inches diameter. After it had expended itself in working the borers, it escaped into the T., and so ventilated the workings. The advanced heading was the only place where these machines were used. During the construction, a temporary locomotive railway was laid along the road over the pass.

The St. Gothard T., a still more stupendous enterprise, was begun 1871, Jan.; and 1880, Feb. 29, the borings from the Swiss and Italian sides met, though much time and labor were still requisite to prepare the T. for railway traffic. The total length is 9¼ m., width 21¼ ft. The average rate of progress was 18 ft. per day; the improved M'Kean drill, latterly used, cut its way at the rate of 12 in. per minute. The contract of the T. was for a cost of nearly $10,000,000; but the actual cost, including approaches, is stated at several millions more.

France proposes a tunnel through the Simplon. A T. connecting England and France beneath the English Channel, for which a company was formed 1872, would eclipse all former undertakings; its length would be 31 m. But in 1883 the Brit. govt. declined to sanction the undertaking. The Arlberg T., begun in the middle of 1880, was completed 1885; it is 6⅜ m. long, and gives direct railway communication between the Austrian province of Vorarlberg, touching Lake Constance, and Innsbruck in the Tyrol. The Mersey railway T., between Birkenhead and Liverpool, 4¼ m. from station to station, was finished 1886.

The most noted adits in the world are the ones at Schemnitz, Hungary, begun 1782, finished 1878, 10·27 m. long, built to carry off the waters from the mines; and the so-called Sutro T., in Virginia City, Nev., 20,000 ft. long, built to ventilate and drain the Comstock lode mines.

In the United States, the largest T. is that extending through the Hoosac Mountain in Mass., near the N. Y. and Vt. boundary-lines, controlled (1892) by the Fitchburg Railroad Company. It was projected 1825 for a canal, but the scheme was abandoned soon afterward on account of the introduction of the railroad system. In 1851 some experimental work was done; 1856 tunnelling was begun; 1862 the state assumed control of the work; and 1876 the work was sufficiently advanced to permit the passage of regular railroad trains on its two tracks. Since then a large amount of work has been done in brick arching. The T. is 4¾ m. long, and, with about 40 m. of adjoining railroad, has cost about $15,000,000.—The longest river T. in the world (1892) is the one connecting Port Huron, Mich., and Sarnia, Canada, beneath the St. Clair River (q.v.). It is 6,050 ft. long, was built in 20 months, cost less than $3,000,000, and was the first cast-iron segmental T. constructed.—For many years a T. has been in process of construction beneath the Hudson river, to connect Hoboken with New York at Morton street. The T. is being built with cast-iron segments bolted together, similarly to the St. Clair river T., and will be lined with brick. Its length between banks will be about 5,400 ft., and between portals 13,000—14,000 ft. About 4,000 ft. had been completed 1891, June. The work was suspended in 1892, as unexpected difficulties had exhausted the fund of $1,500,000, but in 1896–7 plans were formed for its early resumption.—Other notable railroad tunnels are those of the Delaware Lackawanna and Western and the Erie railroads through Bergen Hill, N. J., the longest 4,200 ft.; the Musconetcong T. of the Lehigh Valley road, 4,829 ft.; the Nesquehoning of the Lehigh Coal and Navigation Co.'s road, through Locust Mountain, 3,800 ft.; the Sand Patch of the Baltimore and Ohio road, through the Allegheny Mountains, 4,800 ft.; the Greenbrier river, also in the Alleghenies, at the Big Bend, 6,400 ft.; and nearly 50 of less length.—The principal subaqueous tunnels in operation are two under the bed of Lake Michigan at Chicago, each 2 m. long, built to supply the city with pure water; two road tunnels under the Chicago river; and one under the bed of Lake Erie at Cleveland, 1¼ m. long, built for water-supply.

TUNNEL, St. Clair River Railway: see St. Clair River.

TUNNY, n. *tŭn'nĭ* [L. *thunnus* or *thynnus;* Gr *thunnos*, the tunny-fish—from Gr. *thunein*, to hurry or dart along: It. *tonno:* F. *thon*]: a fish of the genus *Thynnus* and family *Scomberidæ* (q.v.); the Spanish Mackerel (q.v.), but much larger than the mackerel, and highly esteemed as food along the Mediterranean, where it is particularly abundant. The T. is a large fish, sometimes nine ft. long, and weighing 1,000 lbs., or even more. Its form is much thicker than that of the mackerel; its tail so widely forked as to be crescent-shaped.—The Phœnicians established a T.-fishery at a very early period on the coast of Spain, and the T. appears on Phœnician medals of Cadiz and Carteia. Salted T. was much esteemed by the Romans, and was called *Saltamentum Sardicum*. The T. is captured generally by means of nets arranged in a funnel-like form, the fish entering the wide mouth of the funnel, and being gradually driven to the narrow end, where they are killed by lances and harpoons. The line of nets is often more than a quarter of a mile long, and costs about $6,000.—The AMERICAN T. (*Thynnus secundodorsalis*) is commonly called the Horse-mackerel: it is found on the coasts of N. Y., and thence n. to Nova Scotia. It sometimes attains a length of 12 ft. It is nearly black above, silvery on the sides, and white below. Its flesh is much esteemed. It yields much oil, obtained by boiling the head and the belly: 20 gallons are often obtained from a single fish.

To the same genus with the T. belong the Striped Bonito, and the Albacore or Albicore (*T. albacorus*), which inhabits the W. Indian seas, and is esteemed for the table. The name Albicore, however, seems to be often given to different species of this family inhabiting tropical seas, and sometimes to the T. itself. The Long-finned T. (*Orcynus alalonga*), about 12 lbs., off the coast of Cal., is there called Albicore.

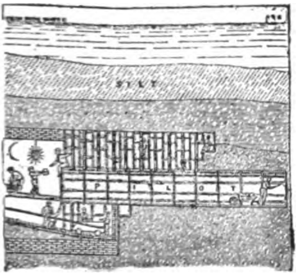
TUNSTALL, *tŭn'stal:* market-town in Staffordshire, Eng.; 168 m. n.w. of London, on a branch of the London and Northwestern railway, and on the Trent and Mersey canal. Among its public buildings are the market, town-hall, and the old court-house, now used as a free public library and reading-room. There are veins of coal, iron, and clay in the vicinity, and it manufactures ironware, pottery, tiles, and brick.—Pop. (1881) 14,244; (1891) 15,73

TUP, n. *tŭp* [OF. *toup*, a ram—probably from butting with his head (see TOP): It. *toppa-toppa*, expressive of repeated blows]: a ram; a male of the sheep kind: V. to butt, as a ram; to copulate, as a male sheep. TUP'PING, imp. TUPPED, pp. *tŭpt*.

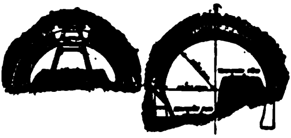
TUPAI'A: see BANXRING.

TUPELO, *tū'pē-lō:* tree of the genus *Nyssa*, nat. order *Cornaceæ*, native of N. America, chiefly of the southern United States; having simple alternate leaves, mostly entire, greenish inconspicuous flowers at the extremity of long stalks, the fruit a drupe. *N. multiflora* attains a height of 60-70 ft., but is usually a middle-sized tree, with beech-

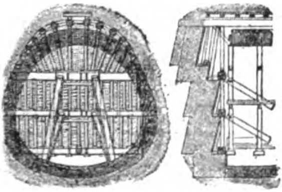
PLATE 6.



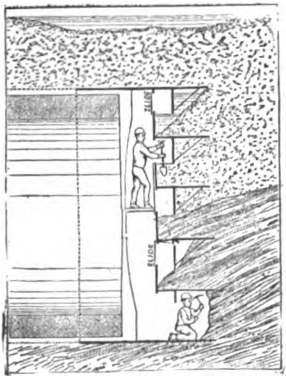
Section showing Method of Work in Hudson River Tunnel.



Method of Work in St. Gothard Tunnel.



Method of Tunnelling on Great Northern Railway, under London.



Showing the Barker Pneumatic Shield.

like horizontal branches and light spray, which turns bright crimson in autumn. The wood is 'unwedgeable,' the fibres crossing obliquely. It is often called **Black Gum Tree**, or Sour Gum Tree, or Pepperidge. *N. uniflora*, the **Large T.**, is a lofty and beautiful tree, remarkable for extraordinary enlargement of the base of the trunk, which is sometimes eight or nine feet in diameter, while at no great height the diameter diminishes to 15 or 20 in. The fertile flower is solitary on a slender peduncle. The fruit, oblong and blue, resembles a small olive, and is preserved in the same way by French settlers in America. *N. candicans* or *capitata*, the **Ogechee Lime**, is a small tree, of which the fruit is very acid and is used like that of the lime. The wood of all the species is soft, that of the Large T. remarkably so.

TUPPER, *tŭp'ėr,* BENJAMIN: soldier: 1738, Aug.—1792, June; b. Stoughton, Mass. He served in the French war 1756–63. At the beginning of the revolution he was maj., and became col. of a Mass. regt. 1776, and the same year commanded a flotilla of gunboats and galleys in the Hudson river, N. Y. He served at Saratoga under Gen. Horatio Gates, and was in the battle of Monmouth. He was brevetted gen. before the end of the war. T. was one of the originators of the Ohio Land Co. He settled in Marietta, O., 1787, and was judge 1788.

TUPPER, Sir CHARLES, K.C.M.G., M.D., D.C.L.: statesman: 1821, July 2— ————; b. Amherst, Nova Scotia. He was educated at Acadia Coll. and at Edinburgh; won the diploma of the Edinburgh Royal Coll. of Surgeons 1843; entered political life in Nova Scotia 1855; was member of the executive council, and provisional sec. 1857–60; prime minister 1864–67. He was elected to the first parliament of the Dominion of Canada; became member of privy council 1870, and was pres. of that body till 1872, when he was made minister of inland revenue. He was minister of customs 1873–78, of public works 1878, of railways and canals 1879–84, of finance 1887; was appointed high commissioner of Canada in London 1884–88; member of the fisheries conference 1887; was created a baronet 1888. In 1896 he became premier of the Dominion. His administration was defeated on Manitoba school bill, and he was succeeded by the Hon. Wilfred Laurier.

TUP'PER, MARTIN FARQUHAR, D.C.L., F.R.S.: English poet, popular rather than great: 1810, July 17—1889, Nov. 29; b. London; son of Martin T., a well-known surgeon, descended from a family which had been expelled from Germany, 1548, on account of Prot. opinions, and had long been settled in Guernsey. Martin T. was educated at the Charter-house, and afterward at Christ-Church, Oxford. On leaving college he entered as a student at Lincoln's Inn, and was called to the bar 1835; but never practiced. In 1832 he published anonymously a small volume of poems, which attracted little attention. His *Proverbial Philosophy* appeared 1839, and was immensely popular both in Great Britain and in the United States, though ridiculed by the critics. Half a million copies were sold in the United States alone. A fair criticism would probably decide that, while there is nothing in T.'s *Proverbial Philosophy* to justify its enormous success—so far as mere circulation goes—the book is yet something better than the mere conglomeration of stupid platitudes which its detractors so confidently declare it to be. Besides this work, on which his reputation rests, T. published *The Crock of Gold,* 1844, a tale; *Geraldine,* 1838, a ludicrous attempt to complete Coleridge's inimitable fragment *Christabel; Modern Pyramid,* 1839; *King Alfred's Poems in English Metre,* 1850; with other work in prose and verse. He died in London.

TURACIN, n. *tū'ră-sĭn:* a pigment containing copper, found in the feathers of some species of the *touraco* or plantain-eater.

TURANIAN, a. *tū-rā'nĭ-ăn* [in Pers., *not Iranian*, i.e., not Persian]: term used by Sassanian monarchs to designate the parts of their realm lying outside Iran; then a designation for the family of languages now generally denominated the *Ural-Altaic*. Other terms have been suggested for this family—e.g., *Alatyan*, the Tartars of Siberia calling themselves *Alatys; Sporadic*, as said of scattered languages; or *Allophylian*—that is, spoken by other different tribes. As a philological term, *Turanian* may be taken as equivalent to *agglutinative* (see PHILOLOGY).—*Turanian languages* are classed by Max Müller in two great divisions, the Northern and the Southern. The N. division falls into five sections—the *Tungusic, Mongolic, Turkic, Finnic*, and *Samoyedic*. Of these, the Tungusic dialects, which extend n. and w. from China, are the lowest in organization, being nearly as destitute of grammatical forms as the Chinese. The Mongolic dialects are superior to the Tungusic, though the different parts of speech are hardly distinguished; both branches, however, show a tendency to grammatical development. The Turkic dialects, of which the Osmanli or Turkish of Constantinople is the most prominent, occupy an immense area, from the Lena and the Polar Sea to the Adriatic. They are rich in grammatical forms, especially in the conjugation of the verb. The most important members of the Finnic class are the Finnic of the Baltic coasts (see FINNS), and the Hungarian or Magyar (see HUNGARY). These have also a fully developed grammatical structure, and in point of declension are richer than the Turkic.

The S. division comprises, among others, the *Tamulic* or Dravidian dialects of s. India (see TAMIL); the *Gangetic* group, in two branches, the Trans-Himalayan (Tibetan, q.v.) and Sub-Himalayan (Bhotanese, etc.); the *Taic*, or the dialects of Siam; and the *Malaic*, or Malay and Polynesian dialects. T. languages do not present the unmistakable family likeness and the clear evidences of genealogical relationship presented by the Aryan and Semitic groups. The nature of their structure, and the nomadic character of the peoples speaking them, are sufficient to account for their diversity, even supposing them to have all sprung from the same stock. The only characteristic T. feature which always remains is this: the root is never obscured; the determining or modifying syllables are generally placed at the end, and the vowels do not become so absolutely fixed for each syllable as in Sanskrit and Hebrew. On the contrary, there is what is called the Law of Harmony, according to which the vowels of each word may be changed and modulated to harmonize with the key-note struck by its chief vowel. The vowels in Turkish, for instance, are divided into two classes, *sharp* and *flat*. If a verb contains a sharp vowel in its radical portion, the vowels of the terminations are all sharp; while the same terminations, if following a root with a flat vowel, modulate their own vowels into the flat key. Thus we have *sev-mek*, to love, but *bak-mak*, to regard, *mek* or *mak* being the termination of the infinitive. The term 'Turanian' is now usually restricted to the Northern division, but is being rapidly superseded by the more exact term 'Ural-Altaic.'

TURBAN, n. *tėr'băn* [F. *turban*—from Sp. and It. *turbante*, a turban—from Pers. *dulband*, a turban: the spellings *tolibant*, *turribant*, *turband*, occur in OE.]: the usual covering for the head worn by the people of eastern nations, consisting of a quilted cap round which a sash or scarf is twisted; a lady's head-dress; a hat consisting of a crown either without a brim, or with a brim turned up close along the crown; the whole set of whorls in a shell. **TUR'BANED**, a. *-bănd*, wearing a turban.

TURBARY, n. *tėr'bă-rĭ* [mid. L. *turbāria*—from OHG. *zurba*, turf]: a place where peat or turf is dug; the right of digging peat or turf; a swampy peat-moss. **TURBARY DEPOSITS**, in *geol.*, swampy deposits.

TURBELLARIA, n. plu. *tėr'bĕl-lā'rĭ-ă* [L. *turbellæ*, a bustle, a stir—from *turba*, a crowd]: in *zool.*, an order of flattened worms; the whirl-worms.

TURBETH, n. *tėr'bĕth:* see TURPETH.

TURBID, a. *tėr'bĭd* [L. *turbĭdus*, confused, disordered; *turbārĕ*, to disturb—from *turba*, a crowd: Sp. *turbido*, muddy]: thick; muddy; not clear, as a liquid. **TUR'BIDLY**, ad. *-lĭ*. **TUR'BIDNESS**, n. *-nĕs*, or **TURBID'ITY**, n. *-ĭ-tĭ*, the state or quality of being turbid; muddiness.

TURBINATE, a. *tėr'bĭ-nāt*, or **TUR'BINATED**, a. *-nā-tĕd* [L. *turbĭnātus*, pointed like a cone, conical—from *turbo* or *turbĭnem*, a whipping-top: F. *turbiné*]: in *bot.*, shaped like a top, or a cone inverted; wreathed conically; spiral-shaped. **TUR'BINA'TION**, n. *-bĭ-nā'shŭn*, the act of spinning or whirling, as a top. **TUR'BINE**, n. *-bĭn*, a horizontal water-wheel (see WATER-POWER).

TURBINIDÆ, *tėr-bĭn'ĭ-dē:* family of gasteropodous mollusks, having a spiral shell, with a narrow entire aperture. The species are numerous and widely distributed. Some are large, others small; some are very beautiful. The beautiful pheasant-shells (*Phasianella*) of the South Seas are referred to this family

TURBITH, n. *tėr'bĭth:* another spelling of TURPETH.

TURBOT, n. *tėr'bŏt* [F. *turbot;* Dut. *tarbot*, turbot: said to be connected with Dut. *bot*, a plaice: most probably from L. *turbo*, a whipping-top, from its shape: comp., however, W. *torbwt;* Gael. *turbaid;* Ir. *turbit*, a turbot]: a large and highly esteemed flat-fish of the genus *Rhombus* and family *Pleuronectidæ*, having the body rhomboidal; the dorsal fin commencing immediately above the upper lip, and extending almost to the tail-fin; the eyes generally on the left side. The Brill (q.v.) belongs to this genus as well as the T., and some other less important fishes. The T. attains a large size, sometimes weighing 70–90 lbs. Its form is shorter, broader, and deeper than that of almost any other flat-fish. The upper surface is brown in color, and studded with hard roundish tubercles. Like the other flat-fishes, it generally keeps close to the bottom of the sea; and it is found chiefly on banks where there is considerable depth of water. Some of the banks in the German Ocean, e.g., the Dogger Bank, abound in T.; it is found also in estuaries, but less abundantly. In former times it was caught chiefly by long lines; but the greater part of the supply for the London market is now obtained by beam-trawling (see TRAWLING). Few kinds of fish are more prized for the table.—The AMERICAN or SPOTTED T. (*Bothus maculatus*) also is highly esteemed for the table: it is common on the coasts of New England and New York. It attains a weight of 20 lbs. The breadth is about one-half of the length. The upper surface is smooth, reddish gray, with large circular or oblong darker blotches and numerous white spots. The DIAMOND T. of California is *Hyopsetta guttulata*.

TURBULENT, a. *tėr'bū-lĕnt* [F. *turbulent*—from L. *turbulen'tus*, restless, agitated—from *turbo*, I disturb: It. *turbolento*]: in violent commotion; restless; disturbed; tumultuous; producing commotion; riotous; disorderly; refractory; insubordinate. TUR'BULENTLY, ad. *-lĭ*. TUR'BULENCE, n. *-lĕns* [F.—L.], or TUR'BULENCY, n. *-lĕn-sĭ*, a disturbed state; disorder or tumult of the passions; a disposition to resist authority, as by a mob or crowd.—SYN. of 'turbulence': agitation; tumult; tumultuousness; insubordination; unruliness; rioting; disturbance; sedition.

TURCISM, n. *tėr'kĭsm* [see TURK]: the civilization or religion of the Turks.

TURCOMAN, n. *tėr'kō-măn*, TUR'COMANS, n. plu. *-mănz:* one of a nomadic and predatory Turkish people in central Asia; also spelled TURKOMAN.

TUR'DIDÆ: see MERULIDÆ.

TUREEN, n. *tū-rēn'* [F. *terrine*, an earthen pan—from F. *terre;* L. *terra*, earth]: an earthen or porcelain vessel for containing soup, etc., at table.

TURENNE, *tū-rĕn'*, F. *tü-rĕn'*, HENRI DE LA TOUR D'AUVERGNE, *dėh lâ tôr dō-vairñ'*, Vicomte DE: one of the most eminent of France's military heroes: 1611, Sep. 11—1675, July 27; b. at Sedan, dept. of Ardennes; second son of Henri, Duke of Bouillon, and of Elizabeth of Nassau, daughter of William I. of Nassau-Orange, the great assertor of the liberties of the Netherlands. T. was brought up in the Reformed faith. On the death of his father, 1623, he was sent to Holland, where, under his uncle, the celebrated Maurice (q.v.), he was initiated into the art of war. Returning to France 1630, he was favorably received by Richelieu, who gave him a commission. In 1637 he was attached to the army of Bernard of Weimar, then engaged in Lorraine; and by bringing about the capture of Landrecies, Maubeuge, and other places, including Brisach, the key of w. Germany, T. gained such repute, that on his return to Paris (1638) he had quite a triumphal reception. The victories of Route and Casale in the Italian campaign, 1639, added to his laurels; and in 1641 he was intrusted with the supreme command. The conquest of Roussillon from the Spaniards, 1642, was proof of his military genius, and he was rewarded 1643 with the baton of a marshal of France, and the chief command on the Rhine, where repeated reverses, a defective commissariat, and want of pay, had completely demoralized the army. Through a liberal expenditure of his own funds, and of loans obtained by him on his own security, the troops were speedily re-equipped, and their *morale* restored by a victory over the Bavarians at Rottweil (1644). In 1644 he took Philipsburg and Mainz, but the following year, May 5, he was completely routed at Marienthal, by Mercy. This disgrace was avenged by Condé at Nordlingen, Aug. 3, where Mercy was slain; and T. gloriously concluded the war on the part of France by the reconquest of the Treves electorate, the conquest of Bavaria in conjunction with the Swedes, and by a successful campaign in Flanders. In the civil wars of the Fronde (q.v.), which immediately followed, T. joined the party of the *frondeurs*, of whom his elder brother was one of the principal leaders; but after being defeated at Rethel (1615, Dec. 15), he withdrew to Flanders. On Mazarin's return from his exile at Brühl, T. joined his party, while Condé deserted to the *frondeurs*, and the two greatest generals of the period were for the first time pitted against each other. T. was uniformly victorious, though his forces were inferior in number to those of Condé, who was ultimately forced to retire from France. T. afterward subdued the revolted cities, crossed the n. frontier, and conquered much of the Spanish Netherlands. On the outbreak of war between France and Holland 1667, Louis XIV. created T. marshal-gen. of France, and would have made him constable but for his Prot. opinions. At the king's suggestion, Bossuet composed his celebrated *Exposition de la Doctrine Chrétienne* expressly for T.'s conversion, and this, backed by the king's repeated solicitations and remonstrances, and doubtless, as Voltaire suggests, by the more efficacious promptings of ambition, had the desired effect, 1668. T.'s campaign in Holland, in which he was nominally under Louis's command, was most triumphant; and the Elector of Brandenburg, who had ventured to side with the Dutch, was pursued to Berlin (1672), and forced to beg for peace. The emperor next took up arms on behalf of Holland, and T. was transferred to the Upper Rhine. This, his last campaign, is disfigured by the unjustifiable devastation of the Palatinate, under orders from Louvois. After routing the Germans at Mülhausen and Turckheim, and forcing them across the Rhine, he was at last opposed to a worthy antagonist in Montecuculi (q.v.); but their famous passage of strategy was left unfinished, T. being killed by a cannon-ball while reconnoitering the ground at Salzbach. His grateful sovereign ordered him to be entombed at St. Denis with the kings of France. By the order of Napoleon, his remains were placed under the dome of the Invalides, at Paris, 1800, Sep. 23. T. left Memoirs of his campaigns.

TURF, n. *tėrf* [Icel. and Sw. *torf;* Dan. *tôrv;* Dut. *turf;* OHG. *zurba*, turf: W. *torp*, a lump]: the grassy surface of untilled land; a detached piece of the surface of a grassy park; sod; sward; the fibrous, black, earthy substance used as fuel; peat; race-ground—hence, horse-racing (see Turf Laws: Horse-racing: Horsemanship: Horse): V. to cover with turf or sod. **Turf′ing**, imp.: N. the operation of covering with turf. **Turfed** pp. *tėrft*. **Turfy**, a. *tėrf′ĭ*, abounding with or resembling turf; in *slang*, given to horse-racing; sporting. **Turf′iness**, n. *-nĕs*, the state or quality of being covered with turf. **Turfen**, a. *tėrf′n*, made of turf; covered with turf. **Turf′ite**, n. *-īt*, in *slang*, a betting-man; a frequenter of race-courses.

TURFAN, *tôr-fân′:* important city in the east of E. Turkestan, on the s. slope of the Thian Shan Mts. It consists of about 6,000 houses.—T. is a name also of Eastern Turkestan itself.

TURF LAWS: the rules which govern the ancient pastime of horse-racing (q.v.). In the United Kingdom these are: 1. As to racing. The stewards or persons intrusted with the management and possession of the land for the time have a right, which is seldom enforced, to turn off any person they please from the grounds. Many of the great races are not run within a year from the time the horses are entered. The owner of a horse entered can withdraw or 'scratch' him before the race is run. When the race is run, the successful party may sue for the amount of the stakes; and if the race is not run, or cannot be run, each subscriber may sue for recovery of his contribution. If the stakes are contributed for an illegal game, it is otherwise; and before the stakes have been paid away, any contributor may sue for and recover his deposit. The stewards decide all disputes about the fairness of a race, and their award is binding: if they cannot agree, then it will fall to be decided by a jury.—2. As to wagers. By the act 8 and 9 Vict. c. 109, s. 15, all wagers were declared void, except as regards subscriptions of money or plate to be awarded to the winner of a lawful game, sport, pastime, or exercise. If one makes a wager on a race, he may retract it any time before the event comes off, and require the money, if deposited, to be repaid; and no wager can be tried in any court of law or equity, so that the winner cannot compel payment. It is merely a debt of honor.

TURGENEF, *tôr-gĕh-nĕf* (or Tourguenieff, *tôr-ghĕn-yĕf*), Ivan Sergeiewitch: Russian poet and greatest of Russian novelists: 1818, Nov. 9—1883, Sep. 3; b. in the govt. of Orel, Russia, of an old Russian family. He studied in the universities of Moscow, St. Petersburg, and Berlin. Returning home 1840, he obtained a place in the ministry of the interior, but a year later retired to private life on his estate. His first work was *Parasha*, a poem; then followed several light sketches, later collected under the title *The Papers of a Sportsman* (1852). In these T. portrays with startling realism the wretched condition of the peasantry; and the little book, which was eagerly read by all classes of Russian society, even by the emperor Nicholas, exerted a sensible influence toward the emancipation of the serfs. His reputation as a faithful delineator of character and manners was much heightened by his next considerable work, *A Nest of Nobles* (1859). In *Fathers and Sons* (1862), T. described the spread of nihilistic principles—a term coined by himself. From 1863 till his death, T. resided mostly in Baden-Baden and Paris. As a novelist he holds rank with the foremost; he is the peer of Dickens and Thackeray, of Balzac and Hugo. Several sinister traits of character T. inherited from his mother: for some account of these, see *Russian Traits and Terrors*, by E. B. Lanin, chapter on *Lying* (Boston 1891). Of his selected works 12 vols. have been transl. into German. Many of his writings have been transl. into French (thence into English); a few have been transl. direct from the Russian. Among his works that have appeared in English are: *Russian Life in the Interior; Fathers and Sons; Smoke, or Life at Baden; Liza; On the Eve; Dimitri Rudin; Spring Floods; Virgin Soil.*—See Isaac Pavlovsky's *Souvenirs sur Tourguénieff.*

TURGENT, a. *tėr'jĕnt* [L. *turgens* or *turgen'tem*, swelling; *turgērĕ*, to swell]: swelling: tumid; protuberant. **TURGESCENT**, a. *tėr-jĕs'sĕnt* [L. *turges'cens*, beginning to swell; *turges'cĕrĕ*, to begin to swell]: growing large; in a swelling state. **TURGES'CENCE**, n. *-sĕns*, or **TURGES'CENCY**, n. *-sĕn-sĭ*, act of swelling; inflation; bombast.

TURGID, a. *tėr'jĭd* [L. *turgĭdus*, swollen, distended—from *turgērĕ*, to swell: It. *turgido*]: swollen; tumid; distended beyond the natural size; puffed up; pompous; bombastic; inflated, as language. **TUR'GIDLY**, ad. *-lĭ*. **TUR'GIDNESS**, n. *-nĕs*, or **TURGIDITY**, n. *tėr-jĭd'ĭ-tĭ*, state of being swelled; tumidness; bombast.

TURGOT, *tür-gō'*, **ANNE ROBERT JACQUES, Baron DE L'AULNE**: French statesman and economist: 1727, May 10—1781, Mar. 18; b. Paris; descended from one of the oldest families in Normandy. T. was intended for the priesthood, but preferred law. Appointed, 1761, intendant of Limoges, he administered the affairs of the province for 13 years, introducing a more equitable administration of imposts, and abolishing the *Corvée*, or old method of repairing roads and bridges by the compulsory labor of the poor inhabitants. He exerted himself also in improving the condition of agriculture and trade, and in every possible way sought the public good. The cultivation of the potato was introduced by him into Limoges. On the death of Louis XV., a wider field opened before him. The finances were in terrible disorder, the whole social and political system of France needed regeneration and reform; and T. appeared to be the man to meet the crisis. He was first made minister of marine, afterward comptroller-gen. of France, when to fill that post was to be virtually the prime minister. In his letter to Louis XVI., he adopted, as the motto of his administration, 'no bankruptcy, no augmentation of imposts, no loans.' His first task was to reduce the expenditure so as to leave an annual surplus of 20 millions of francs, for reduction of the public debt. He augmented the public revenue without imposing new taxes, and he introduced exactness of payments and fidelity of engagements into all public financial operations. One of his first measures was the establishment of free trade in grain throughout the kingdom. He constantly occupied himself with the amelioration of the condition of the people. He proposed to abolish the *Corvée* in the rural districts, to free the provinces from their barriers, commerce from internal duties, trade from its shackles, and, lastly, to make the nobility and clergy contribute to the taxes in the same proportion as the third estate. He wished also, by means of provincial assemblies, to accustom the nation to public life, and prepare it for the restoration of the states-general. If the nobility and privileged classes had possessed foresight and patriotism enough to submit to his plans, France might have been spared the horrors and excesses of the Revolution. But his projects for the public good were defeated by the confederacy formed against him by nobles, courtiers, farmers of the revenue, and financiers. The king forsook him, though at the same time observing that T. and himself were the only persons who desired the welfare of the people. He retired 1776, May 12, having held office only 20 months, of which seven were spent in repressing sedition, and seven in bed while suffering from gout. It is alleged against his practical talent for statesmanship that he lacked address, and that he did not sufficiently dissemble his hatred and contempt for the cowardice and baseness of those who fattened upon the abuses that he was laboring to eradicate. After his retirement, he resumed the pursuit of poetry and literature. His Latin inscription for the portrait of Franklin is memorable: 'Eripuit cœlo fulmen, sceptrumque tyrannis.' His works are a mine of sound and original thought. His *Mémoire* on the revolutionary war in America expresses strikingly profound and original views in regard to colonies. His work on *Usury* contains almost all that is of value in Bentham's *Letters on the Usury Laws.* He held general objections to charitable institutions. He died of gout, at Paris, leaving a memory of practical sagacity, unselfish patriotism, private fidelity, and integrity in public service, which render him one of the most massive figures in moral grandeur in the 18th c. He had, as his colleague Malesherbes said of him, 'the head of Bacon, and the heart of L'Hopital.' See his Life by Foncin (1877).

TURIN, *tū'rin* (*Augusta Taurinorum, Bodincomagus, Colonia Julia, Taurasia*—in Italian, *Torino*): city of n. Italy, formerly cap. of Piedmont, then of the kingdom of Italy; near the confluence of the Po and the Dora Ripaira; 45° 5′ n. lat., 7° 42′ e. long.; 54 m. by rail from the Mont Cenis tunnel. Its pop. at the beginning of the 19th. c. was 42,000 (see further below). T. is an old town which began to acquire importance when Amadeus V. made it the cap. of Savoy, 1418, built a castle there, and took up his residence there. Charles Emanuel I. enlarged the city by royal decree 1620, and it was still more enlargd 1673 and 1702. At the beginning of the 19th c., the French destroyed the ramparts of the town, converting them into public promenades. More recently the moats and fortifications have been demolished, to make way for new streets. These and other improvements have made T. one of the handsomest cities in Europe. Some of the finest of its famous squares are: Piazza San Carlo, surrounded by wide porticoes, and adorned by a fine equestrian statue (by Marochetti) of Emanuel Philibert of Savoy; Piazza Castello, also surrounded by porticoes, prolonged down Via Po to the end of Piazza Vittorio Emanuele, the finest square in Europe for size, regularity of architecture, and beauty of situation; Piazza Carlo Felice, with porticoes and a fine garden; Piazza Carlo Alberto, with an equestrian statue (also by Marochetti) of the king of that name; Piazza d'Armi, vast open space for military exercises, flanked by the old and new arsenals of the kingdom. Leading out of Piazza Vittorio Emanuele, a handsome five-arched bridge crosses the Po, begun by Napoleon I., with money from the sale of the jewels and votive offerings of the cathedral, and finished by the kings of Sardinia. Another fine bridge is that across the Dora, of a single arch, nearly straight, the work of the engineer Mosca. Among the numerous churches, the principal are the Cathedral of San Giovanni, a Gothic structure, built in the 7th c., and reconstructed 1498; San Filippo, the handsomest church in T.; La Consolata; La Gran Madre di Dio; and a Waldensian temple. On the summit of a hill near the town is La Superga, a splendid basilica, raised by Victor Amadeus to fulfil a vow, and now the mausoleum of the House of Savoy. The royal palace, designed by Castellamonte, is poor in outward appearance; the Carignano Palace is an odd building, by Guarini. Other notable buildings are: the town-hall, designed by Lanfranchi; the new univ., with 71 professorships, and (1886) 2,132 students, library of 120,000 vols., and 2,000 MSS.; the Accademia delle Scienze, with an Egyptian museum, the finest in Europe; the Seminary; the Hospital of San Giovanni. The private palaces are numerous and vast, but in a poor style of architecture. There is the Theatre Royal; the Carignano Theatre, designed by Alfieri; the Vittorio Emanuele; and many other theatres.

The industries and the trade of T. are extensive: its manufactures consist of woolen and silk fabrics, velvet hats, paper, pottery, leather, arms, and liqueurs. The people are sober, industrious, and generally thriving.—Pop. (1861) 204,715; (1881) notwithstanding the removal of the capital, 233,124—commune 252,832; (1892) 330,000.

T. was inhabited originally by the Taurinians, a tribe of Ligurians. It is mentioned in history first in the time of Hannibal, by whom it was taken and sacked, on his descent into Italy after crossing the Alps. T. became a royal colony B.C. 166, and was called by Augustus *Augusta Taurinorum*. On the fall of the empire, it went to the Lombards, and became the capital of one of the 30 Lombard duchies. Charlemagne made it the residence of the Duke of Susa, whose line ruled till 1032, when the House of Savoy succeeded it. The city was taken by the French 1506, and held by them nearly 60 years. They took it again 1640; and 1796 its defenses were dismantled, and united to the French empire 1800 as the dept. of the Po. In 1815 it was restored to the House of Savoy.

TURIO, n. *tū'rĭ-ō*, TURIONES, plu. *tū-rĭ-ō'nēz* [L. *turĭō*, the tendril or young branch of a tree]: in *bot.*, a young shoot covered with scales sent up from an underground stem, as in asparagus; the early stage of a sucker when invested by leaf-scales. TU'RIONIF'EROUS, a. *-nĭf'ėr-ŭs* [L. *fero*, I bear]: producing tendrils or young shoots.

TURK, n. *tėrk* [*Tu-kin*, an old Chinese name by which the Turkish tribes were designated]: a native of *Turkey;* in a more extended sense, a member of a race (not confined to the empire of Turkey) related to the Mongols, and including the Petchenegs, Usbegs, Turcomans, etc. (see TURKS); from old ideas connected with the Turks, a cruel tyrannical man. TURKISH, a. *tėrk'ĭsh*, pertaining to or resembling the Turks. TURK'ISHNESS, n. *-nĕs*, the character of the Turks; Turcism. TURK'S-CAP, a handsome species of lily, the *Lilĭum Martăgon.* TUR'KEY, n. *-kĭ*, the country of the Turks; a large domestic fowl, originally from N. Amer.—so called either from the supposition that it came from Turkey, or more likely from the bright-scarlet color of the fleshy excrescences on its head (see below): ADJ. of or from Turkey. TURKEY-LEATHER, also called Morocco-leather, is prepared from goat-skin. TURKEY-RED, a fine durable red produced from madder (see below). TURKEY-STONE, a familiar name for the *whetslate* or *honestone,* some of the finest varieties coming from Turkey, used for sharpening cutting-instrs. and for polishing plate (see HONE). TURKEY-WHEAT, an old name for maize.

TURKESTAN, *tôr-kĕs-tân':* 'country of the Turks,' called also *Jagatai*, and by the Persians *Turan:* extensive region of central Asia, from the Caspian Sea to beyond Lob-nor (long. 110° e.), and from Siberia and Dzungaria s. to Persia, Afghanistan, and Tibet. Until recently it was supposed that the Bolor-Tagh (q.v.), a mountain chain of the first magnitude, running n. and s., divided T. into two parts. English explorers entering T. from the s., and Russians from the n., have shown that no such range exists. Its place is taken so far, however, by a lofty tableland, the Pamir steppe, which, sloping gently e. and w., separates the rivers running e. to the desert of Gobi from those which run to the Sea of Aral. It separates T. into a w. and an e. portion.

WESTERN TURKESTAN, *Great Bukharia*, or simply *Turkestan*, or *Turan*, consists of the great hollow plain of the Caspian and Aral seas, which occupies its w. and centre, and of the hilly and well-watered districts formed by the ramifications of the Thian-Shan Mts. and Hindu-Kush. The plain is composed of deserts of loose shifting sand, interspersed with oases where a subsoil of clay renders the formation of lakelets of rain possible; strips of fertile land along the banks of rivers; and occasional tracts clad with coarse thin grass: the e. districts abound in valleys of remarkable fertility. The climate varies on the plains from extreme cold to burning heat; and though in the e. highlands the cold is almost as intense in winter, the heat of summer is much less. The rivers of T. are the Syr-Daria (see SYR-DARIA) and Amu-Daria (see OXUS); the Zer-Afshan, which rises on the s. of the Asfera-tag, and flows w. 400 m., terminating in a small salt lake or marsh near Bokhara; and the Murghab, which rises in the mountains of Ghur, and, after a w.n.w. course of 450 m., loses itself in a marsh beyond Merv. The vegetable products of the country are fruits, grain, cotton, flax, hemp, and tobacco. Silk is produced in considerable amount. Forests are scarcely represented in this extensive region. Salt is abundant, large tracts of desert being strongly impregnated and even crusted over with it; and sal-ammoniac is common. Agriculture and breeding of domestic animals are occupations of the great mass of the population; but manufacturing industry also is considerable. The produce consists of cotton, silk, linen, and woolen goods, shagreen (superior to that manufactured in Europe) and other kinds of leather, paper made of raw silk, carpets, and a few sabres, knives, and rifles.

Western T. is divided into Russian T., including Khokan (q.v.), now Ferghâna, in the n. and n.e., and the Tekke Turcoman country, with Merv in the s.w., Khiva (q.v.), under Russian influence, in the w., Bokhara (q.v.) in the e. and centre; and Afghan T., including Badakshan (q.v.) and Kunduz, Balkh (q.v.), Maimaneh, Andkhui, and Sir-i-pul. The population comprises Usbegs (q.v.), the dominant race, Turcomans, Karakalpaks, Kirghis (q.v.), Sarts or Tajiks, Persians, Kiptchaks, and a few Arabs, Hindus, and Jews. Of these, the Sarts or Tajiks, original inhabitants of the cities, are of anc. Persian stock, and, with the Usbegs, Hindus, and Jews, form the settled population; the Persians are mostly descendants of slaves; the other races are largely nomad and predatory. For the ethnographic relations of the Turcomans, see TURKS. The prevalent religion is Mohammedanism, and most of the tribes are Sunnites (q.v.). A few Shiites (q.v.), Sufis, and Buddhists are also found.

T. has had an important place in Asiatic history from the very earliest times. The contests between the Iranian and Turanian races are prominent in Firdusi's sketch of the semi-mythical traditions of Persia; and the earliest light of history shows us Bactriana (Balkh) and Sogdiana (Bokhara) as well-cultivated and populous countries, generally attached to the Persian empire, and inhabited by Persians, to whom most of the prominent cities of T. owe their origin. With Persia, T. passed into the hands of the Macedonians, who made Bactria an independent Greek kingdom, while the rest was in possession of the Parthians. Under the Sassanides, the Persian boundary was again advanced to the Jaxartes; but the gradual gathering of Turkish tribes from the n.e. on the right bank of that river led to constant warfare on the frontier, which ultimately resulted in the occupation of *Mawer-ul-neher* ('the country between the rivers'—i.e., the Oxus and Jaxartes) and of Khaurezm (Khiva) by the invaders. In the 8th c. of the Christian era, the Arabs possessed themselves of T., and during the decline of the caliphate it became the seat of various minor dynasties, e.g., the Samani (q.v.) in Mawer-ul-neher, and the shahs of Khaurezm; and after a brief union with the Seljuk empire in Persia was mostly united to Khaurezm, and was with it overrun by the Mongol hordes under Genghis Khan (q.v.), on whose death it became one of the four divisions of his vast empire, and was allotted to his son Jagatai. On the decline of Jagatai's dynasty, Timûr (q.v.) rose to supreme authority in T., and in his 35 years' reign made it the centre of an immense empire, which stretched from the Hellespont to the frontiers of China, and from Moscow to the Ganges. This period was the golden age of T.; its powerful monarch was never weary of adorning its cities with the spoils of victory; colonies of learned men, skilled artisans, and all whose knowledge or abilities could be of service to his subjects, were either transferred to T. from the countries he had conquered, or induced by munificent offers to settle there; till under him and his more immediate successors, Samarkand became a focus of enlightenment and learning. But after the death of Shah Rokh, Timûr's youngest son, the empire was split into numerous fragments; and after a time a new dynasty snatched Persia from Timûr's family, while the Usbegs, under Sheibani Khan, drove them (1500) from the country n. of the Amu-Daria; one of the expelled princes, Mirza Baber, who had ruled in Ferghâna (the s. half of Khokan), subsequently founding the 'Great Mogul' empire in Hindustan. The Usbeg empire generally included Badakhshan, Herat, and Meshed; but these were lost on its division 1658 into various independent khanates. Khiva was conquered by Nadir Shah 1740, and Bokhara limited to the n. bank of the Amu-Daria; but the Kirghis of the Little Horde restored the independence of Khiva, which they ruled till 1792, when the present Usbeg dynasty obtained the throne; and Shah Murad (1806–22), renowned under the appellation *Beggee Jan*, effectually restored to the Bokhariot sceptre its former extensive sway. Khokan, after emancipating itself from the authority of Sheibani's successors, was incorporated with Bokhara, but afterward united with the states of Eastern T., and on their conquest by China resumed its independence. The recent history of T. records a series of wars between Bokhara and Khokan, and Bokhara and Khiva, in which the Bokhariots had generally the advantage, owing to the aid of the Turcomans of the southern desert, whom they subsidize; the raids of the Turcomans along the n. frontier of Persia; the advance of the Afghans from the s.e.; and the progress of Russian conquest from the n. and w. Between the deserts of T. and those of Persia lies a long and fertile tract from the s.e. of the Caspian to Herat, the 'key to India;' over it pass the great routes from western to eastern Asia. North of it, chiefly in the deserts, dwell the Turcomans, brigands and man-stealers, till of late constantly engaged in marauding expeditions against the northern Persians. Their atrocities far exceeded anything recorded of the African slave-trade. In 1860 the Persians marched against them, but were defeated in attempting to capture their intrenchments in a marsh. On that occasion, 15,000 Persians and 30 guns were taken by the Turcomans. In 1865 a more successful expedition proceeded against Sarakhs. In 1849 the Afghans invaded the s.e. part of T. for recovery of possessions which they claimed n. of the Hindu-Kush. In 1850 they took Balkh and Khulm, and in 1859 Kunduz, Badakhshan at the same time submitting to pay a large tribute. Subsequently, as in 1873, the Eng. and Russian governments practically recognized the claim of the Afghans to fix their frontier at the Oxus. Elsewhere the Russians seemed about to absorb all that remained of independent Turkestan: in 1864 they invaded Khokan, and took Tashkend and Khokan. A struggle followed with Bokhara. 1866, May 20, was fought the important battle of Irjar: the emir had to flee for his life, leaving his camp in the hands of the enemy. In 1868 the Russians, 8,000 men, again advanced. The troops of the emir, 40,000 men, took to flight; and a treaty was concluded by which Bokhara transferred to Russia Samarkand and all the territory n. and e. of it. Khiva still remained independent in the midst of its deserts. But early in 1873 an expedition was sent against Khiva, which fell in June of that year, after no great resistance. A great part of Khivan territory n. of the Amu-Daria was ceded to the conquerors; and after a fierce struggle 1875, 6 with the warlike inhabitants of Khokan, which is now the Russian province of Ferghâna, Russia formally annexed the whole. In 1879 the Russians unsuccessfully attacked the Akhal Tekke Turcomans, living on the s. edge of the Kara Kum desert, between the Caspian and Merv; but 1880-1, under Skobeleff, completely subjected the Tekkes; and Merv became Russian. In 1885 a long-contemplated commission, English and Russian, was appointed to delimit the frontier in dispute between Afghanistan and Turkestan, now Russian, especially in the steppe region between Merv and Herat; the Oxus being accepted as frontier further east. After the English Commission was on the ground, serious diplomatic difficulties arose, threatening to issue in war between England and Russia; and a battle took place between Russians and the Afghans at Penjdeh. Ultimately a frontier line was agreed on, which left Penjdeh and Pul-i-Khatun to Russia, and Meruchak and Zulfikar to Afghanistan. There is a railway from the Caspian to Askabad, on the way to Merv. —*Russian Turkestan* had 1885 more than 410,000 sq. m.: pop. nearly 3,250,000; it was divided into the provinces of Zarafshan, Semiretchinsk, Syr-Daria, Russian Kuldja, Amu-Daria, Ferghâna. See Vambery's *Bokhara;* Schuyler's *Turkestan;* Marvin's *Merv, Queen of the World* (1881); *Geog. Mag.*, 1875-6; *Proc. Geog. Soc.*, 1881-85; O'Donovan's *Merv Oasis* (1882); and copious literature in magazines and reviews of 1885.

Eastern Turkestan, known also as *Upper Tartary, Chinese Turkestan, Little Bukharia,* and *Tûrfan,* is bounded n. by the Thian-Shan Mts., w. by the Pamir table-land, s. by the highlands of Tibet or Cashmere. Toward the e. it sinks to the desert plain of the Gobi, round whose w. bay it forms a vast crescent-shaped oasis 4,000 to 5,000 ft. in elevation, drained by tributaries of the Tarim. This river flows e. into the desert, and empties in the Lob-nor, after a course of 1,500 m. The Lob-nor, a lake or rather series of lakes and marshes, was visited by Col. Prejevalsky 1877. The region around it is very desolate and unattractive. The first Englishman (Shaw) who visited Eastern T. gave a very enthusiastic account of its capabilities as a field for English commerce, as it was under the late emir, Yakoob Beg (see his report 1871). He described the plains as covered with corn-fields and orchards, though their fertility depends on irrigation. Canals ramify the country, sometimes crossing one another at three levels. But large areas are very unproductive; and though there are numerous villages and towns, some of them large, the population of the country as a whole is but thin. The country produces gold and abundance of silk; and the inhabitants are skilful in making gold and silver stuffs, carpets, and linen, cotton, and silk goods. The political cap. is Kashgar; commercial cap. Yarkand. In the latter are numerous colleges and schools; in both there was formerly an active trade, with resident representatives of most of the nations of Asia. But since the reconquest of the country by China, anarchy prevails, and trade is for the time destroyed. The inhabitants speak Turkish, but are said to be of Persian descent. Little is known of Eastern T. previous to its conquest by Genghis Khan; but after the decay of his empire into petty states, among which are Kashgar, Yarkand, Aksu, and Khoten, the chiefs of these were constantly quarrelling with one another—a temporary peace being occasionally produced by their subjection to some powerful neighbor—till several of the leaders, with the Yarkand prince at their head, invited the Chinese to take possession of the country, and 1758 it became a province of China. In 1864, however, a mutiny among the Chinese troops induced the dispossessed native chiefs to stir up a Mohammedan insurrection. They invited a Khokan prince, Buzurg Khan, to assume the govt.; and through his lieut., Yakoob Beg, he dispersed the Chinese garrison left to defend the fort of Kashgar. But the lieut. soon superseded him, and became sole emir under the title Athalik Ghazi. He possessed civil as well as military capacity, and raised the country to considerable prosperity. He sent an envoy to Calcutta 1872. But the emir's position did not secure more intimate relations. He had since 1869 successfully resisted the encroachments of Russia, but 1876 the Chinese again advanced, defeated him, and retook their old province 1877—though Kuldja, which had been taken from the rebels by Russia 1871, was retained by that country in spite of Chinese protests until 1881, when, by a treaty between Russia and China, negotiated by the Marquis Tsêng (q.v.), it was restored to China.—Pop. prob. about 600,000.—See Forsyth's *Report* (1875); *From Kulja, across the Tian Shan to Lob-nor*, by Colonel N. Prejevalsky (1879); Boulger's *Life of Yakoob Beg* (1878).

TURKEY, *tėr'ki:* gallinaceous bird of the genus *Meleagris* and family *Pavonidæ;* or, according to some ornithologists, of a distinct family, *Meleagridæ*, both, however, being included by others in *Phasianidæ*. The head is bare, the neck wattled, and the bill of the male surmounted with a conical fleshy caruncle, sometimes erected, sometimes elongated and pendulous. A curious tuft of long hair springs from the base of the neck of the male, and hangs down on the breast. The bill is rather short, strong, and curved; the tail is broad and rounded, capable of being erected and spread out, as the male delights to do when he struts about in pride, with wings rubbing on the ground, uttering his loud peculiar *gobble*. The COMMON T. (*M. gallopavo*, a term which covers two races, *M. sylvestris*, the wild T. of the United States, and *M. mexicana*, or Mexican wild T.) is the largest of gallinaceous birds. It is now bred in nearly all civilized lands. It appears to have been introduced into Europe in the beginning of the 16th c., and in some places became naturalized. In a domesticated state, the T. varies much in plumage, but not in its wild state. The plumage of the wild T. is also richer, and its power of wing greater; but the wings even of the wild bird are short, scarcely extending beyond the base of the tail. The darkest-colored of domesticated turkeys most nearly resemble the wild T. in plumage. In its native woods it seems to attain larger size. Turkeys were formerly plentiful in the forests of the Atlantic states and as far n. as Lower Canada, but have mostly disappeared as cultivation has advanced, and have become rare even in the e. parts of the valley of the Mississippi, where they were formerly very numerous. The T. is found as far s. as the Isthmus of Darien, but not w. of the Rocky Mountains. It inhabits the woods of the larger islands of the W. Indies. In warm climates it is said to produce two or three broods a year; in colder countries it produces only one. The males associate in flocks of ten to one hundred, and seek their food during great part of the year apart from the females, which go about singly with their young, or associate in flocks, avoiding the old males, which are apt to attack and destroy the young. At the pairing-time, desperate combats take place among the males. Wild turkeys roost on trees. They feed on all kinds of grain, seeds, fruits, grass, insects, and even on young frogs and lizards. They make their nests on the ground, merely gathering together a few dry leaves, and often in a thicket. The eggs are usually 9 to 15 in number, sometimes 20.

Though the T. has been domesticated more than 400 years, it still shows many of its wild traits, and is more difficult to manage than ordinary poultry (see POULTRY). The hen lays 12 to 18 eggs, which are hatched in about 28 days. The chicks do not need food for 24 hours, but should then be supplied with hard-boiled eggs chopped fine, and crumbs of stale bread moistened with milk. Food should be given in small quantities, but at frequent intervals. After two weeks the food may be changed to scalded corn-meal mixed with skimmed milk, and boiled potatoes. Sour milk, a little boiled meat which has been chopped fine, and green food, as grass or cabbage, will also be beneficial. Later, cracked corn, buckwheat, and other grains may be supplied. The birds are very tender at first, and must not be allowed to leave the pen before they are two weeks old, or to roam in wet grass for two or three months longer; but from this time a large range is desirable. They must be kept free from lice, and should be provided with sheltered roosting-places. Though they do not reach maturity till the third year, a large proportion of the turkeys sold in our city markets are less than 10 months old. During the whole period of growth they should be fed regularly, and in the last 6 or 8 weeks cooked meal, corn, milk, and other fattening foods should be liberally supplied. Our domestic stock is descended from the Mexican wild T. (*M. mexicana*). There are a number of breeds, which vary considerably in size, form, hardiness, color of plumage, tendency to roam, and value for production of flesh and eggs.

The only other known species of T. is *Meleagris ocellata*, native of Central America. It is not quite so large as the Common T., and has a smaller tail. The neck is less wattled, but the head has a number of fleshy tubercles. The plumage is beautiful, rivalling that of the peacock in metallic brilliancy—blue, green, bronze, red, and golden hues being intimately and finely mingled, and forming *eyes* on the tail, whence the specific name.

TUR'KEY, or the OTTOMAN EMPIRE (q.v.): domain including portions of Europe, Asia, and Africa; and consisting of Turkey Proper, which is under the direct rule of the sultan, and of several dependent and tributary states. The arrangements sanctioned by the Berlin Congress in 1878 have largely changed the size and organization of the empire. See OTTOMAN EMPIRE—*History*. This congress, which met primarily to revise the 'preliminary' treaty of San Stefano, concluded between Russia and Turkey at the close of the war of 1877–8, revolutionized the relation of the Porte to the subject Christian principalities and provinces, alienated large portions of hitherto Turkish territory, and inaugurated a new era in the history of the Ottoman empire. For the principal results of the congress's work, see the titles of the several states which they chiefly concern—ROUMANIA: SERVIA: MONTENEGRO: BULGARIA: ETC.—These results are here summarized.

The vassal states Roumania and Servia, as well as Montenegro, were declared independent, and each obtained a change or extension of territory. Roumania, which had to yield up its portion of Bessarabia to Russia, received in compensation the Dobrudscha, cut off by a line from Silistria to Mangalia. Servia was considerably extended to the south. Montenegro received an important addition to its territory, chiefly on the Albanian side, including the port of Antivari (Dulcigno, with its dist., was added 1880). What was formerly the Turkish vilayet of the Danube was, with the exception of the Dobrudscha, now Roumanian, made into the tributary but automatic principality of Bulgaria, its s. boundary being the Balkan range. A large territory s. of the Balkans was organized as the separate province of Eastern Roumelia, and, though remaining under the authority of the sultan, secured the right of having a Christian gov.gen. and administrative autonomy. It was practically united with Bulgaria after the war with Servia, 1885. It was agreed that Herzegovina and Bosnia, excepting a small portion of the latter, should be occupied and administered by Austria-Hungary, and thus in large measure alienated from the Porte; Spizza and its sea-board, immediately n. of Antivari, was incorporated with Dalmatia; Greece was to receive additional territory—the congress recommending that the rectified frontier should extend up the Salambria river from its mouth, cross the ridge dividing ancient Thessaly from Epirus, cut off the town of Janina so as to leave it to Greece, and descend the Kalamas river to the Ionian Sea. In Crete the reformed government, promised 1868, was to be immediately and scrupulously made operative. In Asia the changes were much less: the port of Batum (henceforth to be essentially commercial), Kars, and Ardahan, with a portion of Armenia, were ceded to Russia, and Khotour, e. of Lake Van, to Persia—the Porte engaging to apply at once much-needed administrative reforms in Armenia and elsewhere. By the 'conditional convention' 1878 between T. and the United Kingdom, the Brit. govt. undertook to defend the Porte's dominions in Asia, and received in return the right to occupy and administer Cyprus. The rectification of the Greek frontier was not arranged till 1881. After endless negotiations and procrastination, which for a while seemed almost certain to lead to war, the Porte agreed to cede, and Greece to accept, a considerable portion of territory, though less than the Congress of Berlin had recommended. The new frontier gave to Greece all Thessaly s. of the water-shed forming the n. boundary of the valley of the Salambria (anc. *Peneus*), including the towns of Larissa and Trikhala; and in Epirus follows the line of the Arta river, leaving the town of Arta to Greece. The fortifications of Prevesa were to be destroyed by the Turks, and the Gulf of Arta made neutral.

TURKEY IN EUROPE, generally hilly and undulating, is traversed by a mountain system which has its origin in the Alps, enters T. at the n.w. corner, and runs nearly parallel to the coast, under the names of the Dinaric Alps and Mt. Pindus, as far as the Greek frontier. This range sends numerous offshoots e. and w.; the great e. offshoot being the Balkan (q.v.) range, with its numerous n. and s. branches. The rivers of T. are chiefly tributaries of the Danube—the Maritza, Strumo, Vardar; the Narenta, Drin, and Voyutza.

On the high lands, the cold is excessive in winter, owing to the n.e. winds, from the bleak and icy steppes of s. Russia; and the heat of summer is almost insupportable in the w. valleys. Violent climatic change is, on the whole, the rule in European T.; but districts sheltered from the cold winds, as the Albanian valleys, have comparatively equable temperature. The soil mostly is very fertile; but the positive discouragement of industry by the oppressive system of taxation long in force has greatly hindered agricultural progress, and the most primitive implements are in common use. The cultivated products include most of those usual in central and s. Europe—maize, rice, cotton, rye, barley, and millet. The mineral products are: iron in abundance, argentiferous lead ore, copper, sulphur, salt, alum, and a little gold, but no coal. The wild animals are the wild boar, bear, wolf, wild-dog, civet, chamois, wild ox, and those others which are generally distributed in Europe. The lion formerly inhabited the Thessalian Mountains.

TURKEY IN ASIA.—This portion of the Turkish empire is more hilly than the other. The two almost parallel ranges Taurus and Anti-Taurus, the basis of its mountain system, cover almost the whole peninsula of Asia Minor or Anatolia (q.v.) with their ramifications and offshoots, forming the surface into elevated plateaux, deep valleys, and inclosed plains. From the Taurus chain, the Lebanon range proceeds s., parallel to the coast of Syria, and, diminishing in elevation in Palestine, terminates toward the Red Sea coast at Sinai. The Euphrates, Tigris, Orontes, and Kizil-Ermak are the chief rivers. On the whole, T. in Asia is ill supplied with water; and though the mountain slopes afford abundance of excellent pasture, the plains, and many of the valleys, especially of the Euphrates, Tigris, and Jordan, are reduced by the parching droughts of summer to the condition of sandy deserts. In ancient times these now desert districts were preserved in fertility by artificial irrigation; but during the six centuries of almost constant war which convulsed this once fair region, the canals were neglected, and have, ever since the rise of the Osmanli power, remained unserviceable. Nevertheless the fertile portions produce abundance of wheat, barley, rice, maize, tobacco, hemp, flax, and cotton; the cedar, cypress, and evergreen oak flourish on the mountain slopes; the sycamore and mulberry on the lower hills; and the olive, fig, citron, orange, pomegranate, and vine on the low lands. The mineral products are iron, copper, lead, alum, silver, rock-salt, coal (in Syria), and limestone. The fauna includes the lion (e. of the Euphrates), the hyena, lynx, panther, leopard, buffalo, wild boar, wild ass, bear, wolf, jackal, jerboa, and many others; and the camel and dromedary increase the ordinary list of domestic animals.

Possessions in Africa.—Tripoli is a vilayet of the Ottoman empire. Egypt, under its hereditary khedive, is still tributary to the Porte, though of late years the relations of the tributary state to its suzerain have been gradually becoming looser, and Brit. influence has for several years been dominant in its administration. Tunis, till 1881 under Turkish suzerainty, is practically a French protectorate. See TRIPOLI: EGYPT: TUNIS: also OTTOMAN EMPIRE.

Industry and Trade.—Owing to the tenure of land in T. agriculture is in a very backward state. The greater part of the land is 'crown land,' the right to cultivate being granted on payment of certain fees, subject to a certain amount of state supervision and subject to revocation if left idle three years. A further system of levying tithes on all produce and a tax of 8 per cent. on exports from one province to another (cereals were exempted from this tax in 1893, and it is proposed ultimately to abolish it entirely) discourage the thrift and enterprise of the farmer, and as a natural result a large portion of the arable land is not cultivated, though of great natural fertility. The chief exports in order of importance are grapes, silk and cocoons, grain, cotton, mohair, opium, coffee, valonia, figs, wool, and olive oil. In the year ending 1893, Mar. 1, total imports were valued at $107,654,780; exports excluding tobacco, $64,116,976; principal ports, Constantinople, Trebizond, and Smyrna, the trade being chiefly with Great Britain, Austria, and France. The entrances and clearances at Turkish ports 1894–5 were 192,269 vessels of 37,618,549 tons; and the mercantile marine 1895 comprised 78 steam-vessels of 37,843 tons, and 786 sailing-vessels of 151,800 tons. In 1896 there were 2,423 m. of railroad in operation in European and 410 in Asiatic T.

Administration, Religion, Education.—The government of T. has always been a pure despotism; the constitution granted 1876 and revoked 1878 was only nominal. The power of the sultan (called also Padishah, Grand Seignior, Khan, and Hunkiar) is much limited by the *sheikh-ul-islam*, chief of the *Ulemas* (q.v.), who has the power of objecting to any of the sultan's decrees, and frequently exercises more authority over the people than his sovereign. The supreme head of the administration, and next in rank to the sultan, is the grand vizier (*sadri-azam*), under whom are the members of the cabinet or divan (*menasybi-divaniié*), including the pres. of the council, the ministers of foreign affairs, of war, of the navy, of artillery, of the interior, of justice, of finances, and the other heads of administrative departments. Governmental crises are frequent, especially of late; but palace intrigues are always a chief element in the state. The governors of the *vilayets*, or provinces, are styled *valis;* each vilayet is divided into *sanjaks*, or *livas*, ruled by inferior officers; each liva containing a number of *cazas*, or districts; and each caza a number of *nahiyehs*. The provincial governors have no longer the power of life and death; and their power of practicing extortion on those under their rule has been greatly diminished. The variable imposts are still farmed; though considerable restrictions are imposed to protect the people from oppression. The established religion is Mohammedanism, but all other creeds are recognized and tolerated; and since 1856 a Mussulman has been free to change his religion at pleasure, without becoming liable, as formerly, to capital punishment. In lack of official data as to the religion of the people, it may be roughly estimated that in *European T.* about three-fifths of the inhabitants are Mohammedans—the remainder being in large part Greek and Armenian Christians. Education was long neglected; but a new system was introduced 1847; and schools for elementary instruction have since been established throughout T., and middle schools for higher education, and colleges for the teaching of medicine, agriculture, naval and military science, etc. Many wealthy Turks, however, send their sons to France or Britain to be educated. The newspapers published in T. are not all printed in Turkish: several are in Greek, French, and other languages.

Revenue and Debt.—Years before the war of 1877, the Turkish exchequer was evidently on the brink of insolvency. In 1875 a decree reduced the interest payable on the debt to one-half the proper amount; and another decree 1876 announced that no further payments would be made till the internal affairs of the empire should allow. The enormous expenditure of the war, and the loss of valuable provinces, added to the disorganization of the finances.

The first budget that admitted a deficit was that of 1874–5, where the revenue was given at $109,604,178, and the expenditure at $111,048,104. In 1875–6 the revenue was estimated at $92,856,870, and the expenditure at $112,476,321. In 1878–9 the revenue was guessed at $68,040,000; expenditure (with part of the war expenses) $243,000,000. In 1890 the sultan ordered the preparation of a budget for 1890–1, none having been issued since 1879. The estimates for 1897–8 made before the war with Greece showed a small surplus. The average for the three years 1892–3 to 1894–5 were receipts $88,282,078, expenditures $87,103,200. By the treaty of Berlin the total external debt of the empire, $1,083,780,000 was to be capitalized, and specific portions to be assumed by Bulgaria, Montenegro, Servia, and Greece; and by arrangements, 1881, Dec., the external debt was to be reduced to about $515,160,000, and certain revenues handed over to a European commission of liquidation. A consolidation of the various loans of the empire was effected on favorable terms 1884–88, and the total debt 1896, July 1, was $639,158,642, besides $138,828,615 still due on the Russian war indemnity.

Army and Navy.—The navy has almost disappeared, and the few obsolete ships which it had left were declared to be unseaworthy when the war with Greece broke out in 1897. The army was in better condition, and in 1897 was estimated on a war footing as, infantry 583,200, cavalry 55,300, artillery 54,720 men and 1,356 guns.

War with Greece.—In 1896 a revolt in the island of Crete broke out, and in Feb., 1897, Greece sent troops to the island and proclaimed the union of Crete with Greece as the only solution of the difficulty. After an ineffectual protest T. gathered an army on the Thessalian frontier under command of Edhem Pasha to oppose the Greek army under Prince Constantine. War was formally declared Apr. 17, and on the same day the Turks captured Molouna Pass after a fierce resistance, Larissa on Apr. 24, and Dokomos May 18. An armistice on May 19 ended the almost uninterrupted successes of the Turks, leaving them in possession of the whole of Thessaly. Greece placed her cause unreservedly in the hands of the Great Powers, and peace negotiations were opened.

The following estimate of the population in 1896 is based on the incomplete census of 1885, the latest taken.

	Area sq. m.	Pop.
In Europe	65,909	5,711,000
Asia—		
Asia Minor	204,618	9,238,900
Armenia	89,264	2,472,400
Mesopotamia and Syria	215,849	4,062,200
Arabia	178,700	1,050,000
Total Asia	682,981	16,823,500
Africa—		
Tripoli	398,738	1,000,000
Tributary States—		
Bulgaria and Eastern Roumelia	37,860	3,309,816
Samos	232	49,733
Egypt	400,000	7,770,000
Held by Austria		
Bosnia, Herzegovina, and Novibazar	23,570	1,721,092
Total	1,609,240	36,385,141

TUR'KEY BUZ'ZARD: see VULTURE.

TURKEY-RED: most durable, and perhaps most beautiful color yet produced on cotton; dyed by a process supposed to have been practiced in India from immemorial time. It passed thence through other parts of Asia to the countries of the Levant, and was introduced into France about the middle of the 18th c.; and into Britain (Glasgow) 1783, by a Rouen dyer named Papillon, in conjunction with George Macintosh. Papillon allowed his process to be made public 1803; and T.-R. dyeing has since been extensively carried on in Glasgow and vicinity, and in Lancashire.

There is a mode of dyeing cotton red with madder practiced by calico-printers—the cloth being previously bleached with chloride of lime—where the whole process occupies only a day or two. But in the case of T.-R., also a madder-dye, the operations are long and tedious, and the bleaching with chloride of lime especially objectionable. The theory of this process is not well understood; hence it has been found impossible materially to shorten it. The three most essential of the eight operations are the oiling, or rather the impregnation with an oleaginous soap, the mordanting with alumina, and the dyeing with madder; but it is found that, if any of the numerous dippings in the oily emulsions are left out, the color is inferior in proportion to the number of omissions. This is the least-understood part of the process, and doubtless gives the dye its rich appearance, which approaches some of the fine reds produced on wool.

Besides being largely used in its plain state, T.-R. cloth is extensively employed for handkerchiefs with white patterns produced on them by discharging the color (see BANDANA); and, of late years, articles of various kinds, with patterns in several colors, have been produced by ordinary calico-printing machines, where, by proper arrangements, the different colors are obtained on parts where the red color is discharged by chloride of lime.

TURKIS, n. *tér'kis:* see TURQUOISE.

TURKISH LANGUAGE AND LITERATURE: language and literature of one of the Turanian (q.v.) group of idioms—now usually designated as the Ural-Altaic group; chiefly divided into Eastern and Western Turkish. The Eastern is represented mainly by the Uigur (Jagatai), an idiom but recently recognized not only as belonging to the Turkic stock, but as its most ancient representative. Its forms are fuller and more pure, albeit, to some extent, harder and rougher. Its alphabet is formed from the Zabian, out of which have sprung also the Mongol and Manchu. Besides this, the Kiptchak, spoken in Kasan and Astrakhan, forms a principal branch of the E. Turkish, for which, however, little has hitherto been done philologically.

Of immensely higher importance is the Western Turkish, or language of the Osmanlis, which, through the conquests of that race, has spread far and wide over the whole of western Asia, the Levant, and parts of Europe. The Osman or W. Turkish (emphatically Turkish) is more melodious and soft than the E. Turkish, and so much mixed with foreign elements, chiefly Arabic and Persian, that, were it not for its grammar, which is purely Tatarian, it could hardly be called an original language, but rather a conglomeration of the three respective idioms. Besides, it has received large increase of words from other Asiatic and European languages, e.g., the Chinese, Greek, and Italian. It is one of the most widely spoken idioms; not only w. Asia, but even e. Europe, uses this tongue to a great extent for commercial and political transactions. The characters in which it is now written are no longer the original Uigur letters, but the Arabic, whose 28 characters have been increased by the four additional Persian characters—produced by further diacritical points—and a new one of their own, amounting in all to 33, which are written from right to left, as in all but one of the Semitic languages. But this alphabet is not suited to a language composed, as Turkish is, of elements belonging to the three great families of speech, Semitic, Indo-European, and Turanic. Neither the vowels nor the consonants are adequately represented in all cases. Occasionally, however, it is written also in Armenian characters, which render its sounds much more faithfully. There is no definite article or gender. The plural is indicated by a final *lar* or *ler*, and the cases are formed by addition of *ung*, *eh*, *i*, *den*, and *le* for gen., dat., acc., abl., and instrumental respectively; which are, in plural, affixed to the *ler* or *lar*. The adjective has no flexion, but is placed unchanged after the noun. Diminutives are formed, somewhat as in Italian, by suffixes. The comparative and superlative are formed by circumlocution. The personal pronouns are without gender, and their declension is like that of the nouns. The possessive pronouns are made by suffixes. The Turkish verb is of a very complex nature. There are seven *genera* (Active, Passive, Negative, Impossible, Causal, Reciprocal, Reflexive), all formed by certain monosyllables affixed or prefixed. The root of the verb is the second person singular imperative, to which the infinitive affix *mak* or *mek* is joined. The moods and tenses are formed chiefly by addition of the respective forms of the auxiliary verb *olmak*, to be. Apart from this, there are special particles to express the optative, conjunctive, etc. Conjunctions are either formed by gerundives or possessive forms, or borrowed from Persian and Arabic. Adverbs are formed by certain suffixes. The Turkish construction is most peculiar: the genitive always precedes the nominative, and the verb always stands at the end. All this gives the Turkish style a peculiarly artificial and inverted appearance, and often a sentence cannot be in the least comprehended until it is quite finished. Oriental flourishes and allegorical figures of speech, with which T. is very lavish, do not facilitate the study of the language.

The original literature of Turkey is found in the scanty remains of the Uigur period. That remote e. branch of the Turkish family had, after their emigration from their homes, s. of Lake Baikal, to the Tangnu Tagh, been foremost in the contests and migrations of central Asia, until they disappeared in the Mongol empire about 1200. They were acquainted with Chinese literature, and had adopted Buddhist doctrines to some extent, and their scanty literary relics bear traces of these influences. When the Turks, in the 11th c., began their conquest of the countries of Mohammedan Asia, they learned to appreciate the literature of Persia, then beginning to grow up in its full glory; and, ever since, Turkish literature and Turkish language have retained a strong Persian impression. Two branches of Turkish literature are usually distinguished—first, the E. or Jagataian, which flourished chiefly between Timur's and Baber's time (1400–1530). Mir Ali Shir, vizier of Sultan Hussein, is the most renowned poet of this period. He also collected the most ancient Jagatai poems. Sultan Baber, of this epoch, wrote important Memoirs of his life and time (transl. into Eng.). The other or Turkish literature, principally so called, is exceedingly rich, but hardly deserving the name of an original literature, inasmuch as it is a mere imitation of Persian and Arabic models. Of early writers, deserving special mention are Sheikhi, romantic poet and physician, and Soleyman Tchelebi. In the 16th c., the most flourishing period of Turkey, were Meshihi, the poet; Kemal Pasha Zadeh, historian and jurist. In history there are, besides annalists like Saad-ed-Din, historians like Mohammed Effendi. Of the same epoch is Lamii, who excelled in many branches of literature, besides being an accomplished translator of Persian poets. Fasli (d. 1563) and Baki, chief of Turkish poets (d. 1600), conclude this period, which is followed by another of great activity, but of inferior rank. To it belong Nebi, the poet; Nefi, the satirist; but above all, Hajji Khalfah (q.v.), eminent historian, geographer, and encyclopedist. Raghib Pasha stands out in the 18th c., with Said Rufet Effendi and a number of smaller writers. Recent literature is unimportant. The best-known Turkish grammars are Davids's (Lond. 1836), Redhouse's (1846, best ed. by Wells), Kasem-Beg's (1847), and Wells's *Practical Grammar;* and Kieffer and Bianchi's, Redhouse's, and Zenker's are among the best dictionaries. For the literature, see Hammer-Purgstall, *Gesch. der Osmanischen Dichtkunst;* De Sugny, *La Muse Ottomane;* Redhouse, *The History of Turkish Poetry* (1879); and Gibb's translations of *Ottoman Poems* (1882).

TURKMANSHAI, *tôrk-mân-shī':* village of Azerbijan, 65 m. e.s.e. from Tabriz; the place where, 1828, Feb. 22, was concluded the treaty between Persia and Russia, by which the former resigned to the latter the provinces of Erivan and Nakchevan.

TURKOIS n. *tėr-koyz':* see TURQUOISE.

TURKS, *tėrks:* numerous, important, and widely-spread family of the human race, whose members are found on the banks of the Lena in Siberia, as well as on those of the Danube and the shores of the Adriatic in Europe. The T. belong to the second of Blumenbach's five great divisions of mankind—*Mongolians;* and to the first, or *Mongolidæ,* in Dr. Latham's threefold classification. In this latter classification, the T. form a branch of the Turanian stock of Altaic Mongolidæ. Their geographical distribution, according to Latham, is as follows: '1. As a continuous population: e. and w., from the neighborhood of the Lake Baikal, 110° e. long., to the e. boundaries of the Greek and Slavonic countries of Europe, about 21° e. long.; n. and s., from the n. frontiers of Tibet and Persia, about 34° n. lat., to the country n. of Tobolsk, about 59° n. lat. 2. As an isolated population: along the lower course of the Lena and the shores of the White Sea, chiefly within the Arctic circle. 3. As portions of a mixed population in China, Tibet, Mongolia, Persia, Armenia, the Caucasian countries, Syria, Egypt, Barbary, Greece, Albania, and the Slavonic portion of Turkey in Europe.' The names Tourkoi, Turkai, and Turcæ occur in some ancient authors as applied to a Scythian people in Asiatic Sarmatia, and it is very likely that the Scythians of antiquity were allied in blood with the numerous existing Turkish tribes, if not absolutely their ancestors. The original seat of the T. was probably on the n. slopes of the Altai range, from which, while a portion emigrated into Independent Turkestan, others, going s.s.e., established themselves on the confines of the Chinese empire. Abel-Rémusat, Klaproth, Ritter, and other high authorities concur in tracing all now existing Turkish tribes to the Hiong-nu, a powerful nation who, prior to the Christian era, threatened to overrun and subjugate China, and who then occupied the whole vast region now called Mongolia, from n. China to Mt. Altai. Dr. Prichard coincides in this opinion. The Hiong-nu (or *Vile Slaves,* so called by the Chinese), indeed, for some time succeeded in establishing a kind of rule in China and even intermarried with the imperial family; but about the beginning of the Christian era, their power in China began to wane, and before the end of the 2d c. they were driven back as far as Independent Turkestan. 'After the fall of the empire of Hiong-nu,' says Prichard, the T. 'are known in Chinese history by the name of Thu-k'iú, or Túrks, and Whey-ou-eul, by Europeans written Huy-hurs, and, more correctly, Uigours. The Uigours, or Eastern Turks, whose history has been elucidated by Abel-Rémusat, are the link of connection between these more remote nations and the Seljuki and Osmanli Turks, who are known to European historians.'

After the fall of the Hiong-nu empire the tribes who composed its strength separated, some maintaining themselves in their acquired settlements, and even conquering portions of China; but by far the greater number spread w. over w. Mongolia, E. and W. Turkestan, and s. Siberia, and gradually lost their power and unity as a nation. Out of this *débris* of a fallen people arose, in the 5th c., the great empire (the empire of Kiptchak) of the Thu-k'iú, which contested the supremacy of central Asia with the Chinese on the e. and the Sassanidæ (q.v.) on the w., ultimately falling (744) before the Hoei-he, a confederation of Turkish tribes previously subject to it. The Hoei-he, attacked in the w. by the Hakas (ancestors of the present Kirghis), yielded to their assailants 848, but retained their power e. of the Bolor-tagh, and for 150 years longer ruled supreme from that range to the Hoang-ho. During the eight centuries succeeding their expulsion from China, a regular though slow progress westward had been maintained by some of the Turkish tribes, a portion of whom appear (5th c.) in s. Russia and on the n. frontier of the Byzantine empire, driving before them the kindred race of the Avars. They were found in Syria and Mesopotamia in the 7th c., and about the same time wandered into n. and e. Khorassan. But the seat of power of the Turkish race still was in central Asia, whence in the 10th c. the Seljuks (q.v.) emerged, conquering Persia, Syria, and Asia Minor, and establishing an empire which reached from Constantinople to the borders of Mongolia. The subdivision of the Seljuk empire in s.w. Asia led to its gradual absorption by the Khaurezmians in the n. and the Kurds in the w., till the irresistible tide of Mongol invasion under Genghis Khan (q.v.), rolling over central and w. Asia and e. Europe, completely overwhelmed Turkish dominancy. The great empire of Timur (q.v.) was Turk, with a strong infusion of the Mongol element, the residue of Genghis's irruption: and its destroyers, the Usbegs (q.v.), and the various other tribes—Kirghis, Kiptchaks, Turcomans, etc.—which now possess its extensive domains, also are of Turkish race. The Osmanli-Turks are descended from a portion of the Turkish tribe of the Kayi, which fled from its settlements in Khorassan before the Mongols, and took refuge with the Seljuks of Iconium. See OTTOMAN EMPIRE: SELJUKS: ETC.

The following is the enumeration of the principal Turkish tribes by Latham: '1. *Uigurs.*—On the Mongol frontier: belonging to China: the Uigurs were the first Turks that used an alphabet: little known. 2. *Turks of the Sandy*

Desert.—Conterminous with Mongolia and Tibet. 3. *Turks of Khoten, Kashgar, and Yarkend.* 4. *Kirghis.*—Independent Tartary: the Kirghis (q.v.) form a portion of the population of the highest table-land in Asia—perhaps in the world—Pamir and the source of the Oxus. 5. *Usbegs* (q.v.).—The Turks of Bokhara. 6. *Turcomans.*—The Persian frontier of Independent Tartary from Balkh to the Caspian: pastoral robbers. 7. *Ottoman or Osmanli.*—The Turks of the Turkish Empire. 8. *Nogays.*—The Turks of the parts between the Black Sea and the Caspian, n. of Caucasus. 9. *Turks of the Russian Empire.*—Bashkirs, Teptyars, Baraba, etc.: with all these, although the language is Turk. there is good reason to believe that the original substratum is Finn: with the Bashkirs, this is generally considered to be the case. 10. *The isolated Yakuts of the Lena.*'

In physical appearance, all these tribes, except the Ottoman T., partake more or less of the Mongolian type. They have in general a broad, flat face, with prominent cheekbones, the head from side to side nearly equal to its length from the forehead to the occiput, nose flat, eyes small, color of the skin yellowish, straight hair, little or no beard, and stature undersized. It is among the nomad and agricultural T. that these characteristics are most prevalent, while among the more civilized they almost disappear. Prichard quotes Lieut. Wood's account of the Kirghis as a good average description of the primitive Turkish tribes: 'In stature, the Kirghis are under the middle height; of a *kyl* numbering seven men, the tallest was 5 ft. 5½ inches in height. Their countenance is disagreeable; the upper part of the nose sinks into the face, leaving the space between their deeply-seated and elongated eyes without the usual dividing ridge: the brow immediately above the eye is protuberant, but starts back more abruptly than in Europeans: their cheeks, large and bloated, look as if pieces of flesh had been daubed upon them; a slender beard covers their chin; and in those individuals who have more luxuriant hair, the beard has a natural curl. Their persons are not muscular. Their complexions are darkened by exposure to all weathers rather than by the sun. The women are rather good-looking, and of delicate form, like the Hazaras, and make good wives.' The T. of the Turkish empire, especially those of the upper classes, differ considerably from the type here described. The Ottoman T., in fact, in feature, height, and general physical structure, bear strong resemblance to other European nations. This is accounted for chiefly by the custom among them for ages of intermarrying with Circassian females.

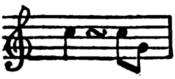
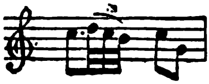
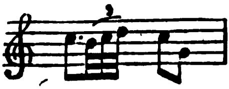
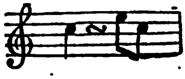
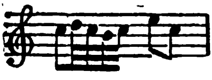
The various Turkish tribes speak very nearly the same language; 'so much so, that the Yakut of the Icy Sea is said to be intelligible to the Turks of central Asia, and even of Constantinople.' In religion, the T. are mostly Mohammedans; but the Yakuts are Shamanists; the T. bordering on the Chinese empire are Buddhists; and those of Siberia, Christians of the Russo-Greek church.

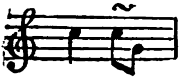
TURK'S ISLANDS: group of small islands in the s.e. part of the Bahama chain; lat. 21°—22° n., long. 71°—73° w. Grand Turk, the largest, is about 100 m. n. of Hayti. The soil of these islands is sterile, and all supplies are imported. The only export is an excellent grade of salt, made by evaporating sea-water in the sun. In 1874 this export exceeded in value the imports, $15,000. Since 1874 the islands, politically, have been controlled by Jamaica.—Pop. about 2,000, with considerable addition during the salt-making season.

TURM, n. *tėrm* [L. *turma*, a squadron of horse]: in *OE.*, a troop of horse.

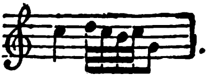
TURMERIC, n. *tėr'mĕr-ĭk* [F. *terre-mérite;* mid.L. *terra-merĭta*, turmeric—*lit.*, valuable earth: L. *terra*, earth, and *merĭtus*, pp. of *merĕor*, I deserve: or from Hind. *zurd*, yellow; *mirch*, pepper]: plant of the genus *Curcuma* (q.v.), nat. order *Scitamineæ*, native of the E. Indies, much cultivated in India and Cochin-China. The leaves are lanceolate, sheathing each other at the base, about 12 in. long; they spring from the crown of the root, and from their centre rises a short leafy spike, with small cream-colored flowers. The root is divided into several fleshy fingers, oblong, and as thick as a man's thumb, sometimes crooked when young, and the root then abounds in a kind of arrowroot; but in a more advanced stage it contains in large quantity a peculiar, resinous, yellow substance, used as a dye-stuff and for other purposes, and called *Turmeric.* It appears in commerce in the form of dried roots or as a powder. It depends for its value chiefly on a resinous principle, *Curcumin*, scarcely soluble in water, but easily soluble in alcohol and ether. The yellow color obtained from T. is not very durable, though it is employed as a dye for silk and wool. Chemists make much use of T. as a test for alkalis, which change its yellow color to reddish brown, as do also their carbonates and phosphates, some of the alkaloids, and boracic acid. T. test-paper is made by immersing unsized paper in tincture of T.: it is much employed in the East in medicine, as a gentle laxative, diuretic, and stimulant; also as a condiment with many kinds of food; and it is the principal ingredient in *Curry-powder*. For its cultivation T. requires rich friable soil and a situation not liable to be flooded. It is propagated by cuttings of the root, which are planted 18 to 24 in. apart: it is planted in Apr. or May, and the crop is gathered in Dec. This kind of T. is sometimes distinguished by the name LONG T.; and the name ROUND T. is given to *Kæmpferia pandureta*, a plant of the same order, also native of the E. Indies, whose roots are shorter and rounder, but otherwise of very similar quality: they are not nearly so much an article of commerce as the other kind, but are particularly valued for preparation of an artificial gold varnish, as they yield a better color than the long or true T. The Arabic name of T. is *Kurkum*, whence *Curcuma.* TURMERIC PAPER, paper stained yellow with a solution of turmeric, used as a test for free alkali, which changes its yellow to a brown.

TURMOIL, n. *tėr'moyl* [OF. *tremouille*, a mill-hopper, proverbial for the constant racket it keeps up: prov. F. *triboul*, great noise, confusion: OF. *trimar*, disturbance—perhaps from L. *tremĕrĕ*, to tremble]: disturbance; harassing labor; trouble and confusion; tumult. TURMOIL, v. *tėr-moyl'*, to harass with commotion; to weary; to be disquieted. TURMOIL'ING, imp. TURMOILED', pp. *-moyld'*.

TURN, v. *tėrn* [F. *tour*, a turn; *tourner*, to turn: W. *twrn*, a turn: L. *tornārĕ*, to turn wood; *tornus*, a lathe: Gr. *tornos*, a pair of compasses]: to cause to go round; to move round; to move from a direct course or straight line; to change the direction of; to change to an opposite direction; to change or alter; to change from one condition or state to another, as to *turn* goods into money; to be changed or transformed; to bring the inside out; to put the upper side downward; to form or shape, as by means of a lathe; to translate, as from one language to another; to transform; to cause to loathe or nauseate; to bewilder or make mad, as, it has *turned* his brain; to make giddy; to grow giddy; to expel, as, to *turn* him out of doors; to fall upon by some change; to direct, as the inclination or thoughts; to change, as a party or principle; to persuade; to change, as religion or a course of life; to revolve in the mind; to make sour, as a liquor: N. act of turning; a movement in a circular direction; a bend, as in a road; the twist of a rope round a dent or belaying-pin; a walk to and fro; a change; change of direction; opportunity; convenience, use, or purpose; that which comes to one by rotation or in the course of duty; a good or evil act; a shock or fright; form or cast, as the *turn* of a sentence: in *music*, an embellishment formed by the adjoining notes above and below combined with the principal note, and indicated by the sign ∼. Thus  is played thus:  or  Should another than the principal note follow the turn, the principal note is added before the next note is played, so as to give the turn four notes; thus  is played . In either of these cases, the turn must be played during the time of the principal note. But when the sign ~ is placed above or below the principal note, the first note of the turn takes the place of the principal, which is played in combination with the others; thus



is played



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TURN'ING, imp.: N. a bending course; deviation from the way or proper course; the art or operation of forming by a lathe. **TURNED**, pp. *térnd*. **TURNER**, n. *térn'ér*, a workman who forms articles with a lathe. **TURN'ERY**, n. *-ér-ĭ*, the art of forming articles by means of a lathe; things made by a turner. **TURN'KEY**, n. [*turn*, and *key*]: one who has the charge of the keys of a prison, and opens and locks the doors. **TURN'COAT**, n. [*turn*, and *coat*]: one who forsakes his party or changes his principles. **TURN-COCK**, the official of a district or parish who has the charge of the keys of the water-plugs. **TURNOVER**, a kind of pie or tart made in the form of a half circle; so called because made by turning one-half of a circular crust upon the other; overthrow, as from a vehicle; an apprentice who enters the service of another master to fulfil his apprenticeship; the earnings of any business for a certain period. **TURN'PIKE**, n. [*turn*, and *pike:* originally a cross of two bars armed at the ends with pikes, and turning on a pin, to hinder horses from entering]: a gate or bar across a road to hinder passage till toll be paid (see HIGHWAY). **TURNPIKE ROAD**, a public road on which tolls (q.v.) are established. **TURNPIKE STAIR**, a turret stair which winds round a central newel; a spiral or winding stair. **TURNSPIT**, a person who turns a spit; a variety of the dog kind, formerly so employed. **TURN'STILE**, a revolving frame across a footpath for the purpose of admitting foot-passengers only. **TURNSTONE**, a bird of the plover family. **TURN-TABLE**, a large revolving platform on a railway for altering the direction of carriages or locomotives. **TURNING-POINT**, that which decides a matter. **TURN-OUT**, act of coming forth; an equipage; a quitting of employment, as by a body of workmen, on account of some grievance real or alleged; the net quality of produce yielded; in *rail.*, a siding; a switch; a place for one train or car to turn out while another passes. **BY TURNS**, one after another; alternately. **TO A TURN**, exactly; perfectly. To **TAKE TURNS**, to take the places of one another alternately. To **TAKE A TURN**, to take a short walk. To **TURN A PENNY**, to gain money by trade, however small the amount. To **TURN ABOUT**, to move the face to another quarter, or in another direction. To **TURN ASIDE**, to avert; to deviate from any course. To **TURN AWAY**, to dismiss, as from service; to avert; to deviate from any course. To **TURN BACK**, to turn round; to proceed in a direction contrary to that already travelled. To **TURN DOWN**, to fold or double down. To **TURN IN**, to fold or double; in *familiar language*, to go to bed; in *OE.*, to depart from the way; to deviate. To **TURN OFF**, to dismiss or put away; to divert or change, as a course; to hang a criminal. To BE TURNED OF, to be advanced beyond, as to be turned of thirty. To BE TURNED OFF, to be discharged, as a workman. To TURN ON, to charge or set running. To TURN ON or UPON, to reply or retort. To TURN OUT, to drive out; to expel; to strike, as workmen; to put to pasture; to make or finish for use, as goods; to rise from bed. To TURN OVER, to transfer; to open and examine; to overset. To TURN OVER A NEW LEAF, to begin a fresh or a new course. To TURN TAIL, to retreat ignominiously. To TURN TO, to have recourse to; to apply one's attention to. To TURN THE BACK, to flee; to retreat. To TURN THE BACK UPON, to quit with contempt; to forsake. To TURN THE HEAD, to make giddy; to bewilder; to infatuate. To TURN MONEY, to employ money in business. To TURN THE SCALE, to make the balance incline to one side; to give superiority or success. To TURN THE STOMACH OF, to sicken. To TURN THE TABLES, to reverse success or superiority. To TURN UP, to bend or be doubled upward; to come to light; to happen. GOOD TURN, a beneficial act.—SYN. of 'turn, v.': to revolve; form; shape; metamorphose; transmute; alter; convert; pervert; betake; transfer; infatuate; whirl; reverse; madden; repeal; retort; hinge;—of 'turn, n.': gyration; meander; vicissitude; alteration; chance; hap; occasion; inclination; exigence; shape; manner.

TURNAU, *tûr'now* (Bohem. *Turnôv*): walled town of Bohemia, circle of Jung-Bunzlau; on the e. bank of the Iser, 50 m. n.e. of Prague. It has a church, built 1825, deemed one of the most beautiful in Bohemia. T. has manufactures of cotton, woolens, and particularly of artificial gems, which are exported in great quantities to the United States. In a battle here 1866, July, the Prussians defeated the Austrians.—Pop. (1881) 4,893.

TURNBULL, *tėrn'bûl*, WILLIAM: engineer: 1800, Oct. 9—1857, Dec. 9; b. Philadelphia. He graduated at the U. S. Milit. Acad. 1819; was commissioned 2d lieut. of artil., but was on topographical duty till 1831, when he was transferred to the corps of engineers, with rank of capt.; was chief engineer in the construction of the Potomac aqueduct 1832–43; supt. of improvements in the harbors of Lakes Ontario, Erie, and Champlain 1843–46; chief topographical engineer of Gen. Scott's army in the Mexican war, for which service he was brevetted lieut.col. and col.; in charge of construction of New Orleans customhouse 1848–9; and supt. of improvement of Cape Fear river, N. C., at the time of his death. His Potomac aqueduct—the first of its kind—gave him wide fame.

TURNBULL'S BLUE: a beautiful blue color, of somewhat similar composition to Prussian blue.

TURNER, JOHN WESLEY: soldier: 1833, July 19— —— ——; b. Saratoga co., N. Y. He graduated at the U. S. milit. acad. 1855, and rendered gallant service both in the Seminole and civil wars; was brevetted brig.gen. and maj.gen. for services in the field during the rebellion. He resigned from the army 1871, and took residence in St. Louis, Mo.

TURNER, *tėrn'ėr*, **Joseph Mallard William**: greatest of Brit. landscape-painters: 1775, Apr. 23—1851, Dec. 19; b. 26 Maiden Lane, Covent Garden, London; son of a barber. He received little or no education beyond a few months' schooling at New Brentford and Margate. His turn for art showed itself very early, and attracted attention and kindly assistance. In after-life T. used to express his obligation to a certain Dr. Monro, who gave him access to his excellent collection of water-color drawings, and otherwise helped and encouraged him. In 1789 he became a student at the Royal Acad., where, doubtless, he learned something; but he seems to have been indebted for his success less to formal teaching than to the tentative efforts of his own singularly original genius. In 1787, when only 12 years old, he exhibited two drawings at the Royal Acad. Again, 1790, he exhibited; and thenceforward till his death, his pictures were regularly found on the walls. His success is shown by the fact that in 1799, when only 24 years of age, he was elected an associate of the Royal Acad., and three years afterward attained the full dignity of academician. The honor was worthily bestowed, as he was already admitted to be the first landscape-painter of his time; but his appointment 1807 to the post of prof. of perspective was scarcely judicious. A man so illiterate that his simplest note included a crop of solecisms was not likely to succeed as a lecturer; and as a lecturer he failed utterly. He possessed abundant knowledge, but could not communicate it, and after a very few years he ceased from the attempt. In the exercise of his art, T. travelled much; he was frequently in Scotland, France, Switzerland, and the Rhine countries; and 1819, 29, and 40, he visited Italy. His industry was almost as great as his genius. To the exhibitions of the Royal Acad. he contributed 259 pictures; but among these many of his finest works were not included; and in another branch of art his achievements were extraordinary. In 1808 he began the publication of his famous *Liber Studiorum*, series of engravings from original designs, which ranks as one of his most important undertakings; to this is to be added his *Scenery of the Southern Coast*, *England and Wales*, *Rivers of England*, *Rivers of France*, etc.; and his services were continually in request as an illustrator. The illustrated edition of Rogers's *Poems* is his most celebrated work in this kind. His last years were passed at Chelsea, in a small house by the river-side. He bequeathed to the nation the noble collection of his works, and they now occupy a room in the National Gallery, a permanent monument of the power and splendor of his genius. The large fortune, about £200,000, which he had amassed by his industry and thrift, he intended to be used in founding an asylum for decayed artists; but, owing to some technical defect in his will, this purpose could not be carried out.

Of the genius of T., and the various phases through which it was developed, we cannot here attempt to treat. In Ruskin's *Modern Painters*, the subject will be found thoroughly and eloquently discussed. There are lives of Turner by Walter Thornbury (1861) and by P. G. Hamerton (1879). The picture presented, especially by the former, is a somewhat dark and painful one. This creator of the beautiful on canvas is represented as coarse, sensual, sordid, avaricious; but the few friends who knew him intimately, regarded him as essentially a man of generous nature who never lost an opportunity of doing a kindness. His obvious eccentricities probably occasioned some misunderstanding of his real character. Ruskin—his intimate friend of ten years—gives him high praise. He lies buried in the crypt of St. Paul's, beside Sir Joshua Reynolds.

TURN'ER, PHILIP: surgeon: 1740, Feb. 25—1815, Apr. 20; b. Norwich, Conn. He was educated for a physician and surgeon by Dr. Elisha Tracy; was asst. surgeon to a provincial regt. in the old French war, at Ticonderoga, 1759; practiced at Norwich 1763–75; was surgeon-in-chief of the Conn. troops before Boston 1775; accompanied the continental army to New York, and served in the battles of Long Island and White Plains 1776; and was surgeon-gen. of the e. dept. from 1777 till near the close of the war. He settled in New York 1800, and was staff surgeon U. S. A. in the war of 1812–15.

TURN'ER, SAMUEL HULBEART, D.D.: 1790, Jan. 23—1861, Dec. 21; b. Philadelphia: educator. He graduated at the Univ. of Penn. 1807; was ordained deacon in the Prot. Episc. Church 1811 and priest 1814; held a charge in Chestertown, Md., 1812–17; and was supt. of the divinity school in Philadelphia 1818. The same year he was appointed prof. of historic theology in the General Theol. Seminary of the Prot. Episc. Church. He accompanied the institution in its removal to New Haven 1820, and in its return to New York 1821; and on its reorganization he was appointed prof. of biblical learning and interpretation of Holy Scriptures, and held the chair till his death. He was also for some time prof. of Hebrew language and literature in Columbia College, New York.

TURN'ER, SHARON: Anglo-Saxon historian: 1768, Sep. 24—1847, Feb. 13; b. London. At the age of 15 he was articled to an attorney, and succeeded his master in the business before his clerkship had expired. He was successful as an attorney, but gave his leisure to historical, archæological, and philological research. After years of hard reading and patient collection of materials, he published 1799-1805, *History of the Anglo-Saxons*, 3 vols., a work, which, with all its imperfections, has given T. a permanent place in English literature. Other writings by him are: *The History of England from the Norman Conquest to* 1509 (1814); *History of Henry VIII* (1826); and *Reigns of Edward VI., Mary, and Elizabeth* (1829)—all repub. under the title *History of England from the Earliest Period to the Death of Elizabeth; Sacred History of the World as Displayed in the Creation and Subsequent Events to the Deluge* (1832 *et seq.*); vol. of essays and poems; etc.

TURN'ER, Thomas: naval officer: 1808, Dec. 23—1883, Mar. 24; b. Washington, D. C. He entered the U. S. navy as midshipman 1825; was promoted passed midshipman 1831, lieut. 1835, commander 1855, capt. 1862, commodore 1863, and rear-admiral 1868; and was retired 1870, Apr. 21. He was in the *Macedonian* exploring expedition 1837–8; the destruction of Malay pirates' towns on Sumatra 1839; commanded the *Reefer* in the attack on Tuspan, Mexico, 1847; captured two blockade runners at Vera Cruz 1860; and commanded the *New Ironsides* in the operations before Charleston 1863, Apr.—Aug. As commander of the s. Pacific squadron, 1868–70, he rendered much-needed service to the sufferers by the great earthquake in Peru.

TURNER'S FALLS: manufacturing town in Montague tp., Franklin co., Mass.; on the Connecticut river, and on the Fitchburg and the Connecticut River railroads; about 3 m. n.e. of Greenfield, the county seat, and 38 m. n. of Springfield. The falls of the river here furnish immense water-power for lumber-mills, large paper-mills, a cotton factory, foundries and machine-shops, one of the largest cutlery manufactories in the world, and a turbine-wheel factory. In its vicinity are found valuable fossil specimens.—Pop. (1890) 6,296.

TURNER, TURNERY: see under Turn.

TURNHOUT, *tėrn'howt:* well-built town of Belgium, province of Antwerp, 25 m. e.n.e. of Antwerp; in the dist. known as the Campine (see Belgium); terminus of a branch-line of the Brussels and Antwerp railway. The inhabitants manufacture ticking, and linen and lace goods, cutlery, playing-cards, paper, oil, etc. T. is historically noteworthy as the scene of two battles—the first, 1597, Jan. 22, won by the Netherlanders, under Maurice, Prince of Orange, over the Spaniards; the second, 1789, Oct. 27, by the patriots, under Van der Mersch, over the Austrians.—Pop. (1880) 16,670; (1888) 17,800.

TURN'ING: art of shaping wood, metal, ivory, or other hard substances into forms having a curved (generally circular or oval) transverse section; and also of engraving figures composed of curved lines on a smooth surface, by means of a machine called a *turning-lathe*. This art is of great importance and extensive application in mechanics, the most delicate articles of luxury and ornament, equally with the most ponderous machinery, being produced by it. The art of T. dates from a very early period, and Theodorus of Samos, about B.C. 560, is named by Pliny as its inventor; but long before this period, the *potter's wheel* (see POTTERY), earliest and simplest form of T.-machine, was in general use, as is evidenced by numerous references in the Old Test. The immense variety of work performed by T.-machines necessitates great variations in their construction; but their mode of operation is always the same, and consists in fixing the work in position by two pivots or otherwise, causing it to revolve freely round an axis of revolution, of which the two pivots are the poles, and holding a chisel or other cutting-tool so as to meet it during its revolution, taking care that the cutting-tool be held firmly and steadily, and moved about to different parts of the work till the required shape be obtained. Lathes are divided, with respect to the mode of setting them in motion, into *pole*-lathes, *foot*-lathes, *hand-wheel* lathes, and *power*-lathes: with respect to the species of work they have to perform, into *centre*-lathes, which form the outside surface, and *spindle*, *mandrel*, or *chuck* lathes, which perform hollow or inside work; though this distinction is for the most part useless, as all lathes of good construction are now fitted for both kinds of work. *Bed*-lathes are those used by turners in wood, and *bar*-lathes for the best sort of metal-work; and the small metal centre-lathe employed by watch-makers is known as a *turn-bench*.

The primitive and most simple form of lathe for wood-cutting is the pole-lathe. It consists of two planks or beams placed horizontally side by side with a narrow space between them, which, being firmly supported at a convenient height, constitute the *bed;* of two uprights or *puppets* rising from the bed, one of them stationary at the left end, and the other sliding along over the slit between the beams, and capable of being fastened at any required point by a projecting tenon and wedge beneath; of a *treadle* below and parallel to the bed; and of an elastic *pole* or *lath* (whence some derive the name lathe) fixed to the ceiling above. This form of lathe is well adapted for turning long thin cylinders of wood, the piece to be turned being held fast at each end by the conical iron or steel point projecting from the inner face of each puppet. Motion is communicated to the work by a cord fastened to the lath overhead, wound twice or thrice round the work, and then attached to the treadle below. When the workman presses his foot on the treadle, the work commences to revolve rapidly, unwinding the cord toward the treadle, and winding it up on the side next the pole, causing the latter to bend considerably. During this period, the workman has been holding his cutting-instrument to the work; but after the treadle has been quite pressed down, he removes his foot, and the reaction of the bent pole causes the work to revolve in an opposite direction, till the pole has straightened itself; and during this latter revolution no cutting is done. When the whole piece is to be turned, the cord must be moved from an unfinished to a finished part of the work. For the pole, an elastic steel bow and string are substituted when the work is light or fine, the cord being attached to the middle of the string, and the bow fastened to the ceiling by its centre. The advantage of the pole-lathe is, that it never acquires an impetus in the direction of the cutting motion, for whenever the pressure on the treadle is removed, the reaction of the pole takes effect; but the great waste of time during the straightening of the pole and rising of the treadle has caused the abandonment of this machine for the foot-lathe. The foot-lathe, the most common and generally useful form of lathe, differs from the former in having a *head-stock* or *fast-head* in place of the left-hand stationary puppet. This head-stock, HH (fig. 1), consists of two supports or puppets firmly connected at their base, and fastened at right angles to the bed by means of the screws A, A; the outer puppet is pierced for the screw S; and the inner is supplied with a steel collar, within which the mandrel, M, which carries the speed-pulleys, P, turns. The left end of the mandrel is concave, so as to allow the steel point of the screw S to fit closely. R is a *rest*, which slides along the slit between the two beams of the bed, and may be clamped at any point, and elevated or depressed as is found necessary. The rest is used by the workman for leaning his cutting-tool upon, in order to afford it greater steadiness. G is the right-hand puppet *front-head* or *tail-stock*, movable along the slit in the bed, and capable of being fastened like the rest; its point, I, can be advanced or retired as required by means of the screw J. C is the spindle, which, being connected with the treadle, W, by means of the rods or chains, E, E, turns the fly or foot wheel, F, and, by means of an endless band connecting the latter with the speed-pulleys, communicates motion to the mandrel. The pulleys on the spindle and mandrel are of different sizes, and so arranged that,

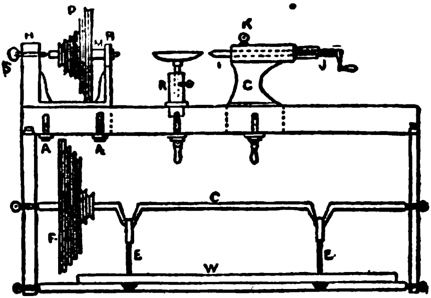


Fig. 1.

when the endless band is placed on the left-hand pulleys, an extremely rapid motion is communicated to the mandrel, the motion being reduced more and more as the band is transferred more to the right, till, at the extreme right, the rotatory motion is much slower than that of the spindle. When the foot-lathe is required for centre-work, the inner end of the mandrel is furnished with a point similar to I; but when hollow or inside work is to be done, it must be armed with a screw, as in the figure: in this latter case, certain contrivances known as *chucks*, for holding the work, are screwed on to the end of the mandrel. Some of these most commonly used are the *screw-chuck*, which shows on its right side a flat circular surface, from the centre of which projects a large, coarse, conical screw for holding firmly any large piece of wooden work; the *hollow chuck*, a strong circular cup with perpendicular sides, into which one end of the work is firmly fastened by a mallet, or, if too small, by four screws working inward through its sides; the *drill-chuck*, of cylindrical form similar to the last, but with a square cavity for holding drills—the instrument, and not the work, being made to rotate in this instance; and the *concentric chuck*, an ingenious piece of mechanism—a flat plate with two slits almost to the centre, and in line of a diameter, within which slits works a spindle with screw-ends carrying two steel studs, whose heads project through the slits above the surface on the right side; these heads carry two curved pieces, which serve as clamps to hold the work; and as the spindle-screws are of the same fineness, and with right and left threads, the revolution of the spindle either removes both further from the centre, or brings both nearer to it; hence, when the studs are once set at equal distances from the centre, they always remain so, and the work may be removed and replaced without danger of destroying the adjustment. All these chucks are of metal, and are mostly employed for heavy work; turners of wood or ivory preferring wood-chucks, which can be altered as required, and secured by an iron ring round the outside, to prevent splitting. The cutting-tools employed are very various:

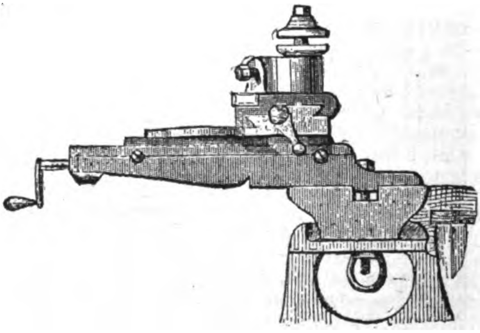


Fig. 2.—Slide-rest.

gouges are used to rough out the work—if soft wood—after which chisels with a straight oblique edge are employed: the instruments for harder materials, such as ivory or bone, are smaller than the former, and have their sharp edges 'better backed;' for inside-work, drills are first used to make an opening, and then cutting-tools of various shapes are used, according to the form which is to be given to the interior surface. To avoid the imperfections in workmanship arising from unsteadiness of hand in the workman, the *slide-rest* (fig. 2) is employed. This valuable addition is furnished with two motions, one toward the work, the other along, parallel, or at any inclination to it, according as cylindrical or conical figures are required; there is a socket for the chisel, which is firmly held in its place by a screw; and after the slide-rest has been adjusted, the operator has only to move the rest forward or sideways, as may be required, the motions being effected by two screws and winches.

The *hand-wheel* lathe is similar to the former, but so much larger as to require two workmen, one of whom is employed in setting the instrument in motion by turning a wheel, which corresponds to the wheel F in fig. 1. The *power*-lathe is similarly set in motion by horse, water, or steam power, and is employed for heavy metal-work, as piston-rods, iron columns of various kinds, wheels, artillery, etc. This machine differs from the foot-lathe chiefly in the substitution of rack-work, and wheels and pinions, for the endless band, and for manual labor, in the various adjustments of the machine, such as in moving forward the tail-stock, etc.; and in the mandrel being supported by both puppets of the head-stock. In wood-turning, the wood, first prepared by a hatchet and rasp, must be lightly though firmly pressed against by the cutting-tool; while metal-work must be cleaned from the sand of the mold or scales of the forge, and in turning requires less care. Soft woods must be made to revolve with great rapidity; very hard woods and brass require much less velocity; wrought-iron and copper, still less; steel, a further diminution of speed; and cast-iron, the least velocity of all. After the work has been duly shaped, it requires to be polished; and this is effected while it is still in the lathe and rotating, by applying shark's skin to wood, pumice-stone and chalk to ivory and horn, and emery, tripoli, or putty powder to metals.

Hitherto we have supposed that the axis of revolution of the work is fixed, and consequently that all work has been turned so as to present a transverse circular section; but many other forms of section may be easily obtained. The general mode of obtaining these non-circular figures is by screwing on to the mandrel an apparatus, by means of which the work can be thrown out of the centre of rotation at regular intervals; but as each different class of form requires a separate kind of apparatus, it is impossible here to describe the operations in detail. One species, however, known as *rose-engine turning*, and employed for producing involved curvilineal figures, such as appear on bank-notes and on ornamented gold, silver, or gilt work, is so peculiar and ingenious as to call for more special notice. In this species, the standards which support the mandrel are no longer fixed at right angles to the bed, but are capable of oscillating forward or backward in a plane parallel to the plane of rotation of the mandrel, and are so acted on by a spring that when pushed to one side they are at once restored to their former position on the pressure being withdrawn. Suppose, then, a metal wheel with its rim waved or indented, fastened concentrically on the mandrel, and the mandrel, pushed aside by a fixed steel point or roller, applied to the rim of the wheel; the reaction of the spring against the pressure of the roller will keep the latter in close contact with the waved rim throughout, and will produce a definite oscillatory movement of the mandrel, of the chuck and the work fastened on it, and consequently—the cutting or graving tool being firmly held by the slide-rest—definite deviations from a circle in the lines marked on the face of the work. The wave-rimmed wheel, called a *rosette*, may be replaced by another, and that by a thir, dand so on till a sufficient number of different waved lines are obtained. A number of rosettes are generally strung at once on the mandrel, and the fixed guide is brought into gearing, by means of a steel band called a rubber, with one rosette after another. Similar concentric curves of greater or less perimeter are obtained by removing the slide-rest from, or bringing it nearer to, the axis of revolution.

TURNIP, n. *tėr'nĭp* [probably Eng. *turn*, in the sense of round, and L. *nāpus;* F. *navet*, a turnip]: biennial plant of genus *Brassica* (q.v.), with lyrate hispid leaves; the upper part of the root becoming, especially in cultivation, swollen and fleshy. It is a native of Europe and temperate parts of Asia, has been long cultivated, and is to be found in almost every garden of the temperate and cold parts of the world as a culinary esculent. It is extensively grown also in fields for feeding cattle and sheep. Its introduction into Britain as a field crop marked a great improvement in the agriculture of that country. In the United States it has not assumed great importance, as, for main products, corn, potatoes, and other crops can be grown to much greater advantage. In gardens the T. is grown for use in summer and winter. For the summer, seed is sown as soon as the ground is dry, in a rich and carefully prepared soil. About 2 lbs. of seed per acre should be sown in drills 15 in. apart. After the plants are well started, they are to be thinned to stand 3 to 5 in. apart in the rows. For the fall and winter supply, seed is to be sown in July or Aug., according to latitude. Land from which early garden crops have been removed, or which has produced a crop of grain or early potatoes, is often used for a late T. crop. The ground should be plowed, dressed with well-rotted manure or commercial fertilizer, and the surface well pulverized. When the T. is grown as a farm crop, seed is sown broadcast at the rate of 1 lb. per acre; but, to facilitate sowing, it is carefully mixed with 8 qts. of sand. Covering is done with a bush harrow or, preferably, with a roller. The T. is grown often as a 'stolen crop' between rows of corn, the seed being sown when the corn is hoed the last time. Seeding to grass is sometimes done when the T. seed is sown, in order to secure two crops with a single preparation of the soil. The principal enemy of the crop is the T.-fly (q.v.). The yield of the T. crop in field culture varies from 200 to 1,000 bushels per acre. In England the crop is fed from the land by sheep which are confined to certain portions of the field by movable fences. In the United States it is necessary to harvest the crop before sharp frosts occur. The tops should be cut off, and the bulbs stored where it is dark and cool, and covered with a little earth. From those designed for table use the central bud should be removed when they are stored, as this will greatly improve their keeping qualities. If grown in large quantities, turnips should be stored in a trench or a root cellar. Before they are fed to stock, they should be passed through a machine for cutting them (see TURNIP-CUTTER). Seed should be grown only from the finest bulbs. These should be set, early in spring, in rows 3 ft. or more apart, and 1½ ft. apart in the row, and by cultivation and hoeing be kept free from weeds during the season. To keep the varieties pure, the different kinds, when grown for seed, should be at quite a distance from one another.

The ruta-baga, known also as the Swedish, Russian, and French T., is grown in gardens and as a field crop, has smooth leaves, is larger than the ordinary T., has a firmer texture, is more nutritious, and requires a longer season in which to mature. Seed is sometimes sown where the plants are to stand, but it is better to sow it in drills, in June or early in July, and 4 to 6 weeks later set the plants in ground prepared as for the common T., 1 ft. from each other in rows 3 ft. apart. They should be cultivated and hoed several times during the season of their growth.

The common T. contains about 92 per cent. of water, and the ruta-baga about 87 per cent. In 1890 the seed-dealers of the United States had on their lists about 50 varieties of the common T. and about 30 of the ruta-baga.

TURNIP-CUTTER: implement used for cutting turnips and other bulbs and roots for cattle. Many kinds are in use, of which perhaps the best are those having knife-edges on the surface of a cylinder or cone, which are brought to act on the turnips by turning a handle.

TURNIP-FLY: any one of several insects destructive to turnips. The name is given often to *Altica* (or *Haltica*) *nemorum*, called also TURNIP-FLEA, from its skipping or leaping powers, but which is truly a very small beetle, with long and strong hind-legs, and ample wings of shining black color, with two yellowish stripes down the wing-cases, and ochreous legs. It swarms in meadows and hedge-rows in most parts of Britain from Mar. to Oct., the larva feeding on many cruciferous plants. It often commits great ravages in turnip-fields while the turnips are very young. The female lays her eggs on the underside of the leaf, and the minute larva mines in the leaf. Its attacks may be prevented by sprinkling lime-dust over the leaves when they are wet with dew. This is to be done at intervals of 3 days from the time when the plants appear till they put out their rough leaves.

The TURNIP-FLY, properly so called, is *Anthomyia radicum*, dipterous insect of family *Muscidæ*, and of the same genus with the Cabbage-fly and Beet-fly. It attacks the root of the turnip, as the Cabbage-fly does that of the cabbage, the larva living in the root.

TUR'NIP SAW'FLY: see SAWFLY.

TURNKEY, TURNPIKE: see under TURN.

TURNSOL, or TURNSOLE, n. *tėrn'sōl* [F. *tournesol;* It. *tornasole*, the turnsol—from F. *tourner;* It. *tornare*, to turn, and L. *sol;* It. *sole*, the sun]: a plant of the genus *Heliotropium*, ord. *Boraginaceæ:* so named because its flower is supposed always to turn toward the sun; a plant, *Crozophŏra tinctōrĭa*, ord. *Euphorbĭācĕæ*, the juice of which becomes blue on the addition of ammonia and exposure to the air; a deep purple dye obtained from this plant.

TURNSPIT, TURNSTILE, TURN-TABLE: see TURN.

TURNSTONE, *tėrn'stōn:* bird of the genus *Strepsilas*, of the Plover family (*Charadriadæ*), distributed in almost every part of the globe. It appears in Britain, chiefly as a winter bird of passage, but breeds occasionally in the Shetlands. It frequents the sea-shore, and is named from its habit of turning over small stones with its bill in search of food. It is the only known species of its genus. The eggs, four in number, are laid on lonely rocky coasts where there is sparse vegetation. They vary greatly in color and markings, and are cunningly concealed. The whole length of the T. is rather more than eight inches. The plumage varies with the age of the bird and the season: in Aug. the plumage begins to become dull. The T. is common in N. America, and is known as beach-bird, calico-jacket, red-legs, creddock, and many other popular names.

TURPENTINE, n. *tėr'pĕn-tīn* [Dut. *terpentijn;* Ger. *terpentin*, turpentine—from L. *terĕbin'thus;* Gr. *terĕbin'thos*, the turpentine-tree: It. *terebinto:* F. *térébinthe*]: an oily resinous substance flowing naturally, or by incision, from several species of trees, as the pine, the larch, the fir, etc. The chief varieties of turpentine are *Common Turpentine*, yielded by *Pinus abies; Venice Turpentine*, yielded by the larch; *Bordeaux Turpentine*, yielded by *Pinus maritima;* and *Chian Turpentine*, yielded by *Pistacia lentiscus*. The Venice turpentine, regarded as the best, occurs as a clear, transparent, pale-yellow, viscous mass, of balsamic odor and acrid bitter taste, perfectly soluble in spirits of wine, and increasing in density on prolonged exposure to the air. On distilling it with water, it yields considerable essential oil, vulgarly known as *spirits of turpentine*. This *oil of turpentine* (which, for greater cheapness, is obtained usually from common turpentine) is, after rectification, represented by the formula $C_{10}H_{16}$, and has a sp. gr. of 0·8749, and a boiling-point of 311° F. It is colorless, transparent, has strong refractive power, strong peculiar odor, and disagreeable acrid taste. It is readily soluble in alcohol, in ether, and in the fixed and essential oils, but is insoluble in water, on which it floats. It is a good solvent for many substances, especially sulphur, phosphorus, caoutchouc, and the various resins; and is largely used in many departments of the arts, forming a large proportion of all oil paints. Great quantities are exported from the United States, where it is yielded mostly by the Swamp-pine.

T. is an energetic producer of Ozone (q.v.); and on keeping it for a long time in a stoppered flask, which should be occasionally shaken, the odor of ozone is very distinct on opening the vessel. Amer. or French oil of T., left in contact with water, is changed into a crystalline compound, $C_{10}H_{16}3H_2O$, called terpinhydrate. Commercial oil of T. often consists of a mixture of several isomeric hydrocarbons which act oppositely on polarized light (like the several varieties of sugar). Deville and Berthelot have ascertained that there are various modifications of which this oil is susceptible without any change in its chemical composition. Of these, *isoterebenthene* and *metaterebenthene*, differ *inter alia* in their boiling-points, and may thus be separated; *terebene* (with odor resembling that of oil of cloves) and *colophene* are obtained by acting on the oil with sulphuric acid; and *camphilene* and *terebilene* by decomposing artificial camphor (which is a combination of the oil with hydrochloric acid) by means of quicklime.

Under the influence of nitric, hydrochloric, and sulphuric acids, chlorine, etc., oil of T. yields many products of interest to the chemist, but as yet of little practical value.

Oil of T. is used in medicine, though, from its disagreeable taste, and from certain bad effects which occasionally follow its use (as strangury, bloody urine, vertigo, a species of intoxication, and an eruption on the skin), it is often supplanted by less certain remedies. It is probably the most effective remedy for expulsion of tapeworm, is nearly equally efficacious over the lumbrici or round-worms, and in the form of an injection is serviceable in the case of ascarides or thread-worms. For an adult, in a case of tapeworm or round-worm, the dose should be one ounce, combined with an equal quantity of castor-oil, or made into an emulsion with yolk of egg or mucilage. In the case of children and delicate women, it is better to try a milder vermicide (see VERMIFUGES). In doses from two drams to two ounces, and in similar combination with castor-oil, it may be given as a cathartic in obstinate constipation, especially when dependent on affections of the brain; in hysteria, epilepsy, tympanitis, passive hemorrhage, and in purpura hæmorrhagica. In small doses (10 to 20 minims), oil of T. is regarded as a diuretic; but it must be given with caution, because of its stimulating properties. It is of more service in chronic mucous discharges of the genito-urinary organs, as gleet, leucorrhœa, etc., than in dropsy. In small doses, it is often useful in chronic rheumatism and in sciatica. In the Dublin school, it has been much employed in small and repeated doses as a general stimulant in low stages of continued fever. *Turpentine Punch* has long been a favorite remedy in these cases in the Meath

Hospital (where Graves and Stokes made their reputation): it is composed of an ounce of oil of turpentine, two ounces of brandy, eight ounces of boiling water, with sufficient sugar. A third of this should be taken for a dose, and should be repeated, if necessary, every third hour. When applied externally, oil of T. is a speedy and powerful rubefacient and counter-irritant, and is beneficially used in this capacity in inflammatory attacks of the throat, chest, and abdomen. The best mode is to rub the oil by means of a bit of flannel over the part to be acted on; over this to lay three or four folds of flannel, wrung out of hot water, and over the flannel to place a dry towel: two or three such applications produce a sufficient result. There is a *Liniment of Turpentine* which is powerfully stimulating, and is applied as a dressing for extensive burns; and is used likewise, with friction, in rheumatic and neuralgic cases. There is also the *Liniment of Turpentine and Acetic Acid*, officinal representative of the *St. John Long's* liniment, an excellent counter-irritant (applied with a sponge) in pulmonary consumption and other chronic pulmonary affections. *Ointment of Turpentine* is a warm stimulating application.

It was mentioned at the beginning of this article that on distilling T. with water the oil comes over. The residue left in the retort constitutes common *resin* (or *rosin*), known also as *colophony:* see RESINS.

TUR'PENTINE-TREE: see PISTACHIA.

TURPETH, n. *tėr'pĕth*, or TURBETH, n. *tėr'bĕth*, and TURBITH, n. *tėr'bĭth* [F. *turbith*—from Pers. *turbed*, a purgative root]: the yellow basic sulphate of mercury—so called from its yellow color, which resembles the root of the *Convolvulus turpethum* or vegetable turpeth.

TURPIN, n. *tėr'pĭn:* same as TERRAPIN.

TURPIN, *tėr'pĭn:* Archbishop of Rheims, friend and companion of Charlemagne, an eye-witness of the exploits that he relates—such are the names and qualifications assumed by the author of a chronicle in Latin prose narrating the expedition of the Frankish emperor against the Saracens of Spain, and particularly the events that proceeded and followed the battle of Roncesvalles (q.v.): see also ROLAND, LEGEND OF. There is great uncertainty about the identity of Abp. T., and about the authorship of the 'History' of Charlemagne and Roland. Some writers incline to identify T. with Abp. Tilpin of Rheims (b. in the first half of the 8th c., d. 794?).—Others see evidence that the 'History' (legend) was falsely attributed to T., and was a product of the 11th c.—written, or at least partly written, by Pope Calixtus II. while he was Abp. of Rheims, about 1090. On this theory, the chronicle was made up from the purer legends and ballads of the Carlovingian times. It soon acquired great popularity, was transl. into French after 1206, and was used by divers chroniclers. The chronicle is of great historic value, notwithstanding all its later embellishments; for, as one of the most ancient traditions of the time of Charlemagne, it has preserved numerous traits and details with much fidelity. The chronicle has been printed in Reuberus's edition of the *Scriptores* (Hanau 1619; Frank. 1726).

TURPIS CAUSA, *tėr'pĭs kaw'zâ:* phrase in law, borrowed from the Roman law, to express an immoral consideration on which some contract or obligation is founded. The rule is, that when an immoral contract is broken, no court of law will assist either party to enforce it. Thus, if one were to let lodgings to a prostitute, with the knowledge that they were to be used for her vocation, he would have no right of action to recover rent.

TURPITUDE, n. *tėr'pĭ-tūd* [F. *turpitude*—from L. *turpĭtūdo* or *turpĭtūdĭnem*, ugliness, foulness—from *turpis*, ugly, shameful]: moral baseness; extreme depravity or wickedness; moral deformity; badness.

TURQUOISE, n. *tėr-koyz'* or *tėr-kwoyz'*, or **Turkois**, n. *tėr-koyz'* [from *Turkey:* F. *turquoise*]: a phosphate of alumina with a little phosphate of iron and copper—a highly prized stone, taking a fine polish, and usually of a beautiful sky-blue or greenish-blue color, used in jewelry, and hitherto found only in the province of Khorassan, in Persia. It is essentially a phosphate of alumina, containing also a little oxide of iron and oxide of copper. It is harder than felspar, but softer than quartz, and has a greenish-blue color. It is opaque, or sometimes translucent at the edges: it is sometimes called Oriental T.; while the name Occidental T. is given to a substance of similar color, found near Simon, in Languedoc, said to be merely bone colored with phosphate of iron. It is spelled also **Turkis**, *tėr'kĭs*.

TURRET, n. *tŭr'rĕt* [L. *turris*, a tower: OF. *tourelle*, dim. of F. *tour*, a tower: W. *twred*, a turret—from *twr*, a tower]: a small tower, often crowning the angle of a wall, etc.; in *anc. warfare*, a movable edifice of wood used in attacking a fortified place. **Tur'reted**, a. furnished with turrets; formed like a tower. **Turriculated**, a. *tŭr-rĭk'-ū-lā-tĕd*, or **Turric'ulate**, a. *-ū-lāt*, furnished with, or having little towers or turrets. **Turrilite**, n. *tŭr'rĭ-līt* [L. *turris*, a tower, and Gr. *lithos*, a stone]: in *geol.*, a genus of chambered shells belonging to the ammonite family, and characterized by their straight, spiral, turreted appearance.

TURRETIN, *tü-rĕh-tăng'* (or **Turretini**, *tôr-rā-tē'nē*), **François**: Calvinist theologian: 1623–87; b. Geneva; son of Bénédict T. (1588–1631), Calvinist pastor and theologian. T. made his theological studies in Geneva, Leyden, Paris, Montauban, and Nîmes; settled in Geneva as pastor of an Italian Calvinist chh.; became prof. of theology in Geneva 1653. He was sternly and uncompromisingly rigid in his theology and in his terms of church-fellowship, and was one of the authors of the *Helvetic Consensus*. His influence on theological opinion in his day was very great. His chief work was *Institutio Theologiæ Elencticæ* (3 vols. Geneva 1688; reprinted Edinburgh 1847–8). This closely reasoned work was, until the middle of the 19th c., of very high authority among Calvinistic scholars; and is still of value as a philosophical memorial.

TURRETIN' (or **TURRETI'NI**), **JEAN ALPHONSE**: liberal Calvinist theologian: 1674, Aug. 24,—1737, May 1; b. Geneva; son of **FRANÇOIS** T. (q.v.). He studied theology in Geneva, Leyden, Oxford, and Cambridge; became pastor of the Italian congregation at Geneva, and (1697) prof. of chh. hist., and prof. of theology 1705. He labored to temper the stern orthodoxy of Geneva and to bring about a union of the Lutheran and Calvinist churches. He procured the abolition of enforced subscription to the *Helvetic Consensus*, and in his efforts for union of churches succeeded in inducing his fellow-Calvinists to offer to Lutherans admission to the communion in Reformed churches. On the subject of union he wrote *Nubes Testium de . . . instituenda inter Protestantes Concordia;* two vols. on theology, *Cogitationes et Dissertationes Theol.;* and two commentaries on portions of the New Testament.

TUR'RET-SHIP, or **MONITOR**: iron-clad ship of war, with low sides, and one or more heavily armored revolving turrets within which are mounted guns of great size. The efficiency of this type of ship lies in the possibility of securing a low freeboard and of heavily armoring the small turrets. Thus there is little exposed to be hit, and that little is so restricted in area that it can be heavily protected. The circular shape of the turrets gives also a deflective effect. The revolving turret as an appliance in naval warfare is of disputed invention. In this country John Ericsson is generally considered the inventor of the system as applied in the monitor class of ships. Theodore R. Timby, native of N. Y., has claimed the invention; and he eventually secured a patent 1862. Not far from this date a similar patent was issued in England to Capt. Cowper Phipps Coles, of the Brit. navy. Capt. Coles perished 1870, Sep., in the capsizing of his turret-ship, the *Captain*, with 600 souls on board, in the Bay of Biscay.

There are two systems of revolving turrets, differing in the method of support. In the American system, as used in the early monitors, the entire turret, with its guns, men, and all, was carried in action by a central spindle extending down to the keel of the vessel. In the English system, now the approved one, the turret is carried by peripheral, slightly coned rollers. These run upon a circular track or bed some distance below the deck, and the bottom of the turret rests on them. A set of rollers with vertical axes bear against the lower periphery to keep the turret from lateral displacement. A species of flange of leather, India-rubber, or some flexible material, is used to exclude water, and prevent it from entering between the turret sides and the aperture in the deck.

In the old days of muzzle-loaders, the guns were run in after each shot, the port-holes were closed, and the guns were loaded. Heavy swinging stoppers were used to close the openings. They were then opened, and the guns were run out and fired.

The modern revolving turret, of which a typical one is here described, is an amplification of the ideas crudely expressed in the original structure. The modern guns are breech-loading and very much longer than the old type. They are mounted on a special carriage, which really represents a slide and bed plate. They protrude for about half their length from the turret, and are never withdrawn, as there would be no room. The recoil is received by some type of buffer, the hydraulic type being much approved. Two guns is a usual number for a single turret, placed parallel and pointing in the same direction. Their elevation is determined by hydraulic power, a ram acting on their breech to raise or lower it. The ammunition is brought up by a mechanical or hydraulic hoist from the hold. On the outer and lower periphery of the turret is a set of cogs, and with these a massive spur-gear engages, worked by a special turret-turning engine. On top of the turret is the conning-tower: this is a small turret in which two or three officers can be accommodated. It has small sighting or peep holes, and, like the turret below, is heavily armored. Over the guns is the firing officer's position. He looks out of a small cross-shaped opening which acts as a rear-sight. Forward on the turret top is the fore-sight. Near him are various speaking-tubes, electric push-buttons, electric gear for controlling the steering-engines, and apparatus for controlling or directing the elevation of the gun and the rotation of the turret. A few officers in the turret have the whole ship under absolute control. In an engagement the ship would be fought from the conning-tower; the guns would be aimed and fired; then the turret would be turned to present the unperforated side to the enemy while the guns were being loaded. In double-turret ships inter-communication between the two turrets is provided for.

The problem of introducing hydraulic power into a revolving turret has been very ingeniously met by the use of a hollow central spindle, which is fixed, and about which the turret rotates. The water is introduced through this, and is taken from it by an encircling collar which turns around it with the motion of the turret.

The new U. S. monitor *Miantonomoh*, successor of the old ship of the same name, is an excellent example of the most improved type of monitor. She is 250 ft. long, 55½ ft. beam, 14 ft. 1¾ in. draught, with about 3 ft. of free-board, her depth being 17 ft. 4½ in. The hull is plated with 7-inch armor from the deck to a line 18 inches below the water. Thinner plating is carried still further down. The turrets are plated with armor 11½ inches thick, on a 10-inch backing of wood and a 1-inch steel plating; and a protective inner screen of ¾-inch steel is set off 8 inches from the backing, to catch rivet-heads and other fragments which might be detached in action. The conning-tower is of 9-inch steel. The ship has two turrets, each carrying two 10-inch steel rifles, weighing about 63,000 lbs. each, firing a 500-lb. projectile with a fighting range of 7 miles. The turret is carried by 20 forged steel rollers 14 inches in diameter and 10 inches long.

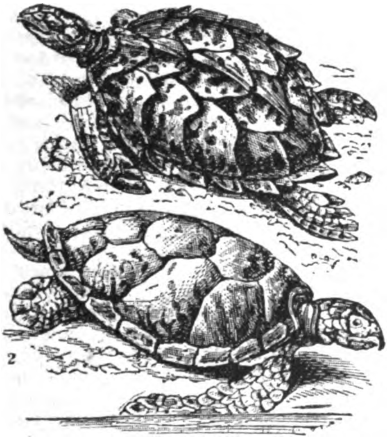
See ARMOR-PLATES: NAVIES, MODERN: UNITED STATES NAVY: BRITISH NAVY.

TURRITELLIDÆ, *tėr-ĭ-tĕl′ĭ-dē:* family of gasteropodous mollusks, having a much-elongated spiral shell, the lower spires remarkably separated. The name Turret-shell is often given to them.

TURTLE, n. *tėr′tl* [It. *tortora, tortola;* L. *turtur*, a turtle-dove, the bird that cries *tur, tur*]: the Turtle-dove (q.v.), a species of pigeon noted for the constancy of its affection; the large edible sea-tortoise—called also the green turtle (see below). **Turtle-shell**, the name of a shell, a beautiful species of *murex;* also tortoise-shell. **Turtle-soup**, a soup made with the edible turtle; the flesh of the edible turtle added to an ordinary soup-stock. **Turtle-stones**, in *geol.*, flattened nodules of calcareous clay, ironstone, or other matter, internally divided into numerous angular compartments, often arranged in lines or bands, and generally containing some central organic nucleus, round which the matter has aggregated; called also *septaria.*

TUR′TLE: popular name of any chelonian reptile. The marine turtles have a rather flat carapace, and fin-like paddles instead of legs, suited for swimming, and not for walking. The fore-limbs are much longer than the hind-limbs. The toes are not all furnished with nails; in some species there is only one on each foot, in others there are two. Although turtles lay their eggs on the beach, they seldom visit the shore for any other purpose. They deposit their eggs in holes, which they scoop in the sand with their hind-feet. The eggs are numerous, 150 to 200 often being deposited at a time; and the T. lays several times a year. The young, soon after being hatched, make their way through the sand which covers them, and immediately betake themselves to the water. The eggs are hatched by the heat of the sand alone, and the young receive no attention from their parents. Turtles crawl slowly and awkwardly on the shore; but their movements in water are comparatively quick, and even graceful. Some of the species feed entirely on grass-wrack and seaweeds, which their powerful, hard, and sharp-edged jaws cut with great ease: others prey on crustaceans, mollusks, and fishes. Their jaws are powerful enough to crush very large shells, and the carnivorous turtles are in general more rapid in their movements than the others. The flesh of those which subsist on animal food is musky and unpleasant; but that of the species whose food is vegetable is much esteemed. In many tropical countries, turtles, after being captured, are kept in inclosures to which the tide has access, to be killed when they are wanted. They are capable of subsisting long without food, and are exported alive from the W. Indies, to supply the tables of the wealthy in other lands. In tropical countries, turtles are often very cheap. Their eggs are esteemed for food in the countries where they are found, and are sought by probing the sand with a light stiff cane in places known to be frequented by turtles. Turtles are easily taken when they come ashore for laying their eggs; and one after another may be turned on its back—in which position it is helpless, and cannot make its escape—till a sufficient number is secured. They are also, however, taken in the sea, being cautiously approached by boats when resting, or apparently sleeping, at the surface, or by divers when descried at the bottom in their feeding-grounds. A small harpoon is used, or a rope is thrown over the head of the turtle. Turtles are sometimes pursued by boats in shallow parts of the sea until they are exhausted, the clearness of the water permitting them to be seen even when they dive; and when the boat gets near enough, a man leaps overboard, and seizes the T., clinging with both hands to the shell. It is said that at Mozambique a species of sucking-fish (*Echineis*) is used for catching turtles, a cord being attached to the fish, which is allowed to swim away in the sea, and is sure to fasten itself firmly to the first T. it meets.

The most esteemed T. of the W. Indies is the **Green** T. (*Chelonia midas*), the kind exported for aldermanic and other feasts. The Green T. attains great size, being sometimes six or seven ft. in length, and weighing 700 or 800 lbs. The plates of its carapace do not overlap one another; the central ones are almost regular hexagons. The popular name is derived from the color of the fat, so much prized by epicures.—Another excellent species of T. is the **Edible** T. (*Chelonia virgata*) of the Pacific, frequently four or five ft. long.—The **Hawkbill** T. (*Eretmochelys imbricata*), found in warmer parts of the Atlantic, in the Indian Ocean, and in the Red Sea, is particularly valuable, as yielding the best Tortoise-shell (q.v.). It is one of those turtles which have the plates of the carapace imbricated, or overlapping one another like tiles. Its flesh, though not so much esteemed as that of the Green T., is good food; its eggs also are very good.—There are other turtles, having the head of a larger size, and the jaws curved toward one an



1, Hawkbill Turtle (*Eretmochelys imbricata*); 2, Green Turtle (*Chelonia midas*).

other at the extremity: of these one is the **LOGGERHEAD** T. (*Thalassochelys caouana*), native of warmer parts of the Atlantic. Others, again, have the carapace and plastron not hard, but leathery, and sometimes soft enough to yield to the pressure of the finger. One of these is the **CORIACEOUS** T. (*Sphargis coriacea*) of the Mediterranean and Atlantic: it attains a size even greater than any of the species above described, but its flesh is coarse and unpleasant.

The French, encouraged by their success in pisciculture, have attempted to introduce the Green T. on the s. coasts of France. There has not yet been time to prove the success of the experiment.

Of the aquatic and carnivorous Soft-shelled Turtles, a family found in the Mississippi valley, the Leather T. alone has the edge of the upper jaw serrate behind; the Common Soft-shelled T. and a Tenn. species have the feet spotted, while these are white in *A. ferox.* The family of Snapping Turtles includes the common one (*Chelydra serpentina*), from Canada to Ecuador, and the Alligator Snapper, of the Gulf states and n. to Wis., 40 in. or more in length. The Box T. family (unfortunately named, since it does not include the Common Box T. of dry woods, N. Y. to Mo. and s., placed in the next family) is represented by the Mud T., head with light dots, found from N. Y. to Fla., and the Musk T., w. to Ill., odor strong, and neck with two yellow stripes; also *A. carinatus* of the great valley, with neck unstriped, shell-plates with black radiating lines; in these last two, the shell cannot be closed. Of the Pond Turtles, *Emydidæ*, are the Map T. and another species similar, Le Sueur's, western, both with reticulated yellow markings; the edible Salt-marsh or Diamond-back, plates usually with concentric dark stripes; the Red-bellied Terrapin, N. J. to Va.; the Hieroglyphic Terrapin, with jaws not serrated, as in the last; the Yellow-bellied Terrapin of the Mississippi valley, the plastron with large black blotches; the western Elegant T., yellow beneath, with a blotch on each plate; the Rough T., with wrinkled carapace, Va. to Fla.; the common Painted T., marginal plates with bright red; the eastern Wood Tortoise, shell with both concentric and radiating black lines; the abundant Speckled Tortoise, black with orange spots; also 3 or 4 other species. Of the Land Tortoises, *Testudinidæ*, with fingers and toes bound together by integument, the herbivorous Gopher Turtle is found in the s. states, and n. to N. C. in pine barrens.

TUR'TLE-DOVE, or **TUR'TLE**: bird of the genus *Turtur*, family *Columbidæ*, having the bill more slender than pigeons, the tip of the upper mandible slightly bent down. They are also more slender and elegant in form than pigeons, and generally smaller; the wings are longer and more pointed; and the tail is longer, rounded, or slightly graduated. There are numerous species, natives of warm climates. Their soft and gentle, yet loud, *cooing* has attracted attention even more than their beauty, and made them a favorite subject of allusion in poetry. *T. risorius*, the most common species in Palestine, and probably the one intended in the Song of Solomon, is about ten inches in entire length, with a short tail; the general color gray tinged with red; the upper parts greenish brown, with a black collar on the back of the neck. It is often kept in confinement, and becomes very tame.—Very similar in size and form is the COMMON TURTLE-DOVE (*T. communis*), native of almost all the warmer parts of the old world, a summer visitant of s. Europe and of s.e. England. The tail is long and much rounded; the plumage soft and without gloss, exhibiting finely mingled tints of gray and brown; the crown of the head bluish; all the tail-feathers tipped with white; a black patch on each side of the neck. Other species of T.-D., from different parts of the world, as well as these, are frequently kept in confinement, and are very gentle though not very intelligent pets: their cooing resounds through a whole house.

TUSCALOOSA, *tŭs-ka-lō'sa:* city, cap. of Tuscaloosa co., Ala.; at head of navigation on Black Warrior river, and on the Alabama and Great Southern railroad; 55 m. s.w. of Birmingham, 75 m. n.n.w. of Selma. It is in a cotton-growing and coal region; and contains the Univ. of Ala., State Lunatic Asylum, Alabama Central Female College, Tuscaloosa Female College, Ursuline convent; 2 national banks (cap. $100,000), 1 private bank; and 1 daily and 2 weekly newspapers. Its manufactures comprise cotton and woolen goods, leather, foundry products, and boots and shoes.—T. was the cap. of Ala. 1826–46.—Pop. (1880) 2,418; (1890) 4,215.

TUSCAN, a. *tŭs'kăn:* of or pertaining to *Tuscany*, in Italy—applied to the simplest of the five classic orders of architecture, a Roman modification of the Doric which allows no ornaments or fluting (see ORDER—in Arch.): N. inhabitant or native of Tuscany; a fine kind of straw-plait, made in Tuscany, used for hats, etc.

TUSCANY, *tŭs'ka-nĭ:* formerly a sovereign grand duchy in w. Italy, mostly but not wholly s. and w. of the Apennines; lat. 42° 20′—44° 10′ n., and long. 10° 15′—12° 20′ e.; 8,440 sq. m. Pop. (1860, the date of its annexation to Sardinia) 1,800,000; (1891) 2,281,446. The n. and n.e. of the country is covered with mountains, whence numerous rivers and streams flow down to the sea, the most important rivers being the Arno (q.v.), the Serchio, and the Ombrone. This dist. is also the source of the Tiber (q.v.). The rest of T. is an undulating region of hills and dales, except the coasts, which are flat and marshy. Of these marsh-lands the largest is (or was) the *Maremma* (q.v.). The principal crops are maize, wheat, rye, and barley. Wine and oil also are abundantly produced. Mules, cattle, and sheep are reared in great numbers; there are flourishing manufactures of silks, woolens, and straw (for hats), and considerable trade in articles in marble, alabaster, porcelain, coral, wax, etc. T., as now a *compartimento* of the kingdom of Italy, comprises the 8 administrative provinces of Arezzo, Firenze, Grosseto, Livorno, Lucca, Massa e Carrara, Pisa, and Siena.—For the anc. history of T., see

Etruria: for its mediæval history, **Florence**. It is to be added only that modern T. was constituted in its present dimensions first 1569, when Cosmo de' Medici became Grand Duke of T. The national assembly of T., 1860, Aug. 16, pronounced the deposition of the reigning dynasty; and four days later declared for annexation to Sardinia.

TUSCARORAS, *tŭs-ka-rō'raz:* tribe of N. Amer. Indians, who, at the settlement of N. C., had 15 towns on the Tar and Neuse rivers, and 1,200 warriors. In 1711 they began a war with the settlers, and, after a series of savage encounters, were defeated, and joined the Iroquois in N. Y., where they became allies of the English, and where some families of them still reside on an Indian reservation in the w. part of the state.

TUSCULUM, *tŭs'kū-lŭm:* anciently a city of Latium, about 15 m. s. of Rome, near the site of the modern Frascati (q.v.), on a ridge of hills known as the *Colles Tusculani*, and forming part of the Alban range. It is not to be inferred from its name (as Festus infers *s. v. Tuscos*) that it had any connection with the Etruscans. Mythically it derived its origin from Telegonus and Circe; but we catch the first certain glimpse of its historical existence toward the close of the regal period at Rome. Then, however, it appears in high prosperity and power; therefore its beginnings are probably remote. Octavius Mamilius, ruler of T., foremost prince in Latium, married a daughter of Tarquin the Proud (see **Tarquinius**), and was conspicuous in the last of the great struggles of the banished tyrant to regain his kingdom. On that occasion the Latins were so thoroughly defeated (see **Regillus, Lake**) that they were fain to enter into an alliance with the victor, and ever afterward—except in the single instance of the great Latin war, B.C. 340–338—remained steady in their fidelity to Rome. As early as B.C. 378, the inhabitants of T. received the Roman franchise; and among its many distinguished *gentes* was the Porcian, which produced two famous men of a thoroughly 'Roman' stamp, Cato *Major* and Cato *Minor*. Toward the close of the republic, T. became a favorite country residence of the wealthy Romans. Lucullus had a villa here (with parks and gardens extending n. for miles); so had Cato, Brutus, Hortensius, Crassus, Cæsar, and Cicero. The villa (*Tusculanum*, Tusculum House) of the great orator Cicero is peculiarly memorable as the place where he composed many of his philosophical works, particularly those charming dialogues (*Tusculanæ Disputationes*) named from it. Long after the Western Empire had fallen, T. continued to flourish. As late as the 12th c., the ancient city continued entire; but 1191 it was stormed by the Romans (between whom and the Tusculans there had long been deadly feud), and razed to the ground. It never recovered from this blow; but lower down there arose as from its ruins the town of Frascati (q.v.). Many fine remains of anc. T. have been dug up in recent times, remarkable among which are the amphitheatre, theatre, and city walls.

TUSH, int. *tŭsh* [imitative of a blurt with the lips: Fris. *twoy;* Dan. *twi*, interjection when one spits with disgust: Low Ger. *tuss*, hush]: an interjection to check or rebuke; a sound expressing contempt; be silent.

TUSH, n. *tŭsh* [a form of Tusk, which see]: in *OE.*, a pointed tooth; a tusk. **Tushed**, a. *tŭsht*, tusked.

TUSK, n. *tŭsk* [AS. *tusc*, a grinder: Fris. *tosch*, a tooth: Gael. *tosg*, a tusk]: the long pointed tooth on each side of the upper jaw of certain animals, as the elephant and wild boar. **Tusked**, a. *tŭskt*, or **Tusky**, a. *tŭs'ki*, furnished with tusks. **Tus'ker**, n. *tŭs'kėr*, an elephant with full-sized tusks.

TUSKEGEE INSTITUTE: see Washington, Booker T.

TUSSAC-GRASS, n. *tŭs'săk-grăs* [Gael. *dos*, a tuft; *dosach*, tufted—*lit.*, the grass that grows in tufts (see Tussock]: large, hardy, coarse, but nourishing grass (*Dactylis cæspitosa*), of the same genus with the Cock's-foot Grass of Britain, native of the Falkland Islands, remarkable for forming great tufts, sometimes five or six ft. high, the long tapering leaves hanging over in graceful curves, five to eight ft. long, and an inch broad at the base. It is, however, sufficiently delicate to be very good food for horses and cattle; and, the attention of Brit. farmers having been called to it, it has been tried with much success in the Hebrides, Orkney Islands, and in several similar localities. The inner part of the stem, a little above the root, is soft, crisp, flavored like a hazel-nut, and often eaten by the inhabitants of the Falkland Islands. The young shoots are boiled and eaten as asparagus.—Of the same genus is Orchard Grass (*D. glomerata*), naturalized in the United States from Europe, and cultivated because it can thrive in the shade.

TUSSEH, n. *tŭs'sėh* [native Indian name]: the silk spun by the Tusseh silkworm. The centres of the traffic are in Bengal, the central provinces, Berar, and the Nizam's country: see Silk.

TUSSICULAR, a. *tŭs-sĭk'ū-lėr* [L. *tussicŭlāris*, pertaining to a cough—from *tussis*, a cough]: pertaining to, or good for, a cough.

TUSSILAGO, *tŭs-ĭ-lā'gō:* genus of plants of the nat. order *Compositæ*, sub-order *Corymbiferæ*, having bracts with a membranous edge, naked receptacle, hairy pappus; the florets of the ray pistilliferous, in many rows, tongue-shaped; those of the disk perfect, few. *T. Farfara*, sometimes called Colt's-foot, the only British species, has become thoroughly naturalized in New England, N. Y., and Penn., where it is found in wet places. It has single-flowered scaly scapes, appearing before the leaves in early spring, the flowers yellow, both disk and ray; the leaves heart-shaped, angular, downy beneath. The leaves have a somewhat glutinous and subacrid taste, and are used for relief of asthmas and troublesome coughs, either in the form of a decoction, or smoked. They have been used with advantage in scrofula.—Nearly allied to T. is *Petasites*, of which one species, the Butter Bur (*P. vulgaris*, formerly

Tussilago Petasites), is a native of Britain. The leaves resemble those of *T. Farfara*, but are much larger; the flowers also appear before the leaves, but in a dense thyrsus, and are of a pale flesh-color. The flowers of both are much sought by bees, as are those of *Petasites* (formerly *Tussilago*) *alba* and *P.* (formerly *T.*) *fragrans*, natives of s. Europe.

Colt's-foot (*Tussilago Farfara*).

TUSSLE, n., or **Tustle**, n. *tŭs'sl* [another form of *tousle*, to pull about roughly (see Touse)]: a struggle or struggling; a petty hand to hand conflict between two persons; a scuffle: V. to struggle hand to hand. **Tus'sling**, imp. **Tussled**, pp. *tŭs'sld*.

TUSSOCK, n. *tŭs'sŏk* [W. *dâs*, a heap, a mow: Gael. *dos*, a bush, a cluster: F. *tas*, a heap: Dan. *dusk*, a bunch, a tassel]: a clump or tuft of grass or twigs; a tall strong grass, originally from the Falkland Islands; also called Tussac-grass (q.v.). **Tus'socky**, a. *-ĭ*, covered with or resembling tufts. **Tussock-moth**, grayish-white moth (*Laria pudibunda*), about an inch long, the upper wings freckled, with four irregular darkish lines, the under wings nearly white. The caterpillar, which is covered with tufts of hair, does great mischief in hop plantations, and is known in Great Britain by the name *Hop-dog*. In the United States, the Hickory Tussock caterpillar (found often on elm and ash) has white and black tufts, with two long black pencils of hair on the fourth and tenth rings; the moth (*Halesidota Caryæ*) has long ochreous fore-wings with 3 rows of semi-transparent dots. Among other species is the Checkered Tussock-moth (*Lophocampa tessellaris*), the fore-wings with 5 bands of spots; and the caterpillar, found on the button-wood, with light-yellow tufts and orange-colored pencils.

TUSSUR, n. *tŭs'sėr* [Skr. *tasar*, a shuttle]: an inferior sort of silk, the produce of a worm found wild in many parts of India: more correctly TASAR.

TUSTLE, n. *tŭs'sl:* see TUSSLE.

TUT, int. *tŭt* [another form of *tush:* prov. Dan. *trutte*, to stick out the lips: Sw. *trut*, a snout]: an exclamation of impatience intended to check or rebuke.

TUTELAGE, n. *tū'tĕ-lāj* [L. *tutēlă*, protection—from *tutor*, a protector—from *tuĕor*, I preserve: It. *tutela;* F. *tutelle*, guardianship]: state of being under a guardian; protection; guardianship. TUTELAR, a. *tū'tĕ-lėr*, or TU'TELARY, a. *-lėr-ĭ*, having the charge or guardianship of (a person, a place, or a thing); protecting; guardian.

TUTENAG, or TUTENAGUE, n. *tū'tĕ-năg* [F. *toutenague:* a Pers. word]: Chinese copper, an alloyed metal of eight parts of copper, three of nickel, and six and a half of zinc; in *India*, zinc or spelter.

TUTOR, n. *tū'tėr* [F. *tuteur*—from L. *tutor* or *tutōrem*, a watcher, a defender—from *tuĕor*, I look at, I guard: It. *tutore*]: a guardian; one who has the care of a minor; one who has the care of the education of another; a private instructor; in *law*, a guardian of the person as well as of the estate of a boy under 14, or a girl under 12 (see GUARDIAN). At common law, a father is both tutor and curator of his children; in *universities* and *colleges*, one who superintends the studies of students or undergraduates: V. to teach; to instruct; to correct. TU'TORING, imp.: N. the act of instructing; education. TU'TORED, pp. *-tėrd*. TU'TORESS, n. *-ĕs*, a woman who instructs privately. TU'TORSHIP, n. *-ship*, the office of tutor. TU'TORAGE, n. *-tėr-āj*, education, as by a tutor; guardianship. TU'TORISM, n. *-ĭzm*, tutorship. TUTORIAL, a. *tū-tō'rĭ-ăl*, pertaining to a tutor or instructor; exercised by a tutor. TUTO'RIALLY, ad. *-lĭ*.

TUTSAN, n. *tŭt'săn* [F. *toute-saine*, *lit.*, all-heal—from L. *totus*, whole; *sanus*, healthy]: a shrubby species of St. John's wort, *Hypericum Androsæmum*, ord. *Hypericăcĕæ*.

TUTTI, n. plu. *tût'tĭ* [It.—from L. *totus*, the whole]: in *music*, all; a direction to performers for all to play or sing in full concert. TUTTA ARCO, whole length of the bow. TUTTA FORZA, full power or force.

TUTTLINGEN, *tût'lĭng-ĕn:* town of Würtemberg; right bank of the Danube; 20 m. w.s.w. of Sigmaringen. It manufactures shoes, surgical instruments (largest establishment in Germany), knives, needles, cloth, cotton, hosiery, linen, and silk; also has some trade in grain. T. is historically notable as the scene of a battle 1643, during the Thirty Years' War, in which an Austro-Bavarian force, under Hatzfeld and Mercy, defeated the French.—Pop. (1880) 8,022; (1890) 10,092.

TUTTY, n. *tŭt'tĭ* [F. *tutie;* Port. *tutia;* It. *tuzia*—from Ar. *toutiyā*]: impure protoxide of zinc collected from the chimneys of smelting-furnaces; as a powder it is of some value in medicine.

TUTUILA, *tû-tû-ē'la:* island in the Pacific, belonging to the Navigators' or Samoan group (see SAMOA); about 17 m. long and 5 m. broad. The coast is bold, and the island is traversed by sharp-peaked, highly picturesque mountains, 2,500 to 3,500 ft. high. The harbor of Pago Pago, an ancient crater, is very deep, and completely landlocked by lofty mountains. In 1872 the chief of this part of T. ceded to the United States the use of this harbor as a naval and coaling station. This was ratified by treaty signed at Washington, 1878, Jan. 17. The mountains are clothed with dense green forests of bamboo, banana, cocoa-nut-tree and other palms. Between the months of Nov. and May, fearful hurricanes break over the island, and so powerful is their effect that they are said by the natives to *skin the land.* See SAMOA: APIA.

TUWHIT, n. *tû-hwĭt'*, or TUWHOO, n. *tû-hwô':* a word imitative of the cry of the owl.

TUYERE, n. *tô-yãr'* or *twē'ãr* [F. *tuyère*, opening of a furnace; *tuyau*, a pipe, a tube: OHG. *tuda*, a tube]: *formerly*, the point or nozzle of the blast-pipe that enters the side of a smelting-furnace and through which the air is forced; also the aperture in the side where the nozzle enters; a name now applied to the blast-pipe, of which there may be two or five.

TVER, *tvĕr:* govt. of Great Russia, bounded n.w. by the govt. of Novgorod, s.e. by the govts. of Moscow and Smolensk; 25,080 sq. m. In configuration, T. is an elevated tableland, forming part of the Valdaï plateau, which throws off rivers running n.w. into the Baltic and s.e. into the Caspian Sea. The chief rivers are the Volga, with its affluents, the Tvertza and the Mologa; the Western Dwina, the Msta, and the Tsna. Most of these rivers rise in the n.w., where are numerous lakes. The climate is somewhat severe; the soil is not fertile—marsh prevailing, also woods and tracts of peat, little used as yet. Rye and oats are the only cereals produced with success. Agriculture is the chief employment; but other industries are gradually developing, and 50,000 men are employed in the lake-fisheries and in the carrying trade.—Pop. (1890) 1,791,000.

TVER: city of Great Russia, cap. of the govt. of same name; at the confluence of the Volga and Tvertza; 348 m. s.e. of St. Petersburg, by the St. Petersburg and Moscow railway. At this point the Volga becomes navigable for steamers, though when the water is low there is much difficulty in making the voyage hence to Nijni-Novgorod (q.v.). Among the important buildings of T. are 2 monasteries, 23 churches, and 47 factories of different kinds, of which the chief is the cotton-mill of Kaoulin and Zologin, employing 1,500 persons. Nail-making is an important industry; and linen, leather, and paper are largely manufactured. T. is well situated for an entrepôt, as the St. Petersburg and Moscow railway here meets the Volga, the principal commercial artery of interior Russia; and its commercial prosperity is increasing. Cereals and iron from Siberia are chief articles of commerce.—Pop. (1890) 40,962.

TWADDLE, v. *twŏd'dl*, or **TWATTLE**, v. *twŏt'tl* [Swiss, *watteln*, to dabble in the wet: Icel. *thwætta;* Norw. *twætta*, to jabber, to talk nonsense: Bav. *schwatteln*, to splash, to chatter]: to talk foolishly; to chatter; to talk in a trifling manner: N. foolish or trifling talk; a twaddler. **TWAD'DLING**, imp. *-dlĭng:* N. empty gossip. **TWADDLED**, pp. *twŏd'dld*. **TWAD'DLER**, n. *-dlér*, one who talks in a silly manner. **TWAD'DLY**, a. *-dlĭ*, gossiping; twaddling.

TWADDLE, n. *twŏd'dl* [name of its inventor]: a scale used in the chemical trade to denote the strength of various solutions, especially the percentage of acid contained.

TWAIN, a. or n. *twān* [see Two]: two.

TWAIN, **MARK**: see **CLEMENS, SAMUEL LANGHORNE**.

TWANG, v. *twăng* [imitative of a resonant sound: see also **TANG** 1]: to sound with a quick sharp noise, as a tense string pulled and allowed to spring back suddenly: N. the sound of a tense string pulled and suddenly set free; a nasal tône of voice; a disagreeable resonance in a voice from speaking through the nose: a disagreeable flavor. **TWANG'ING**, imp.: **ADJ.** contemptibly noisy. **TWANGED**, pp. *twăngd*. **TWANGLE**, v. *twăng'gl*, in *OE.*, to twang. **TWANK**, v. n. *twăngk*, same as *twang*.

'TWAS, *twŏz:* a contracted form of *it was*.

TWATTLE, v. *twŏt'tl:* same as **TWADDLE** (q.v.).

TWAY-BLADE, n. *twā'blād:* a kind of orchis with two large leaves; *Listĕra ovāta*, ord. *Orchidācĕæ*.

TWEAK, v. *twēk* [a form of **TWITCH** (q.v.)]: to pinch or pull with a sudden jerk and twist, as the nose: N. a sharp pinch or jerk. **TWEAK'ING**, imp. **TWEAKED**, pp. *twēkt*.

TWEED, *twēd:* famous Scottish river, rising in s. Peeblesshire, 1,500 ft. above sea-level; flowing n.e. to Peebles, thence e.-by-s. to its junction with the Ettrick, and thence e. and finally n.e. to the North Sea at Berwick-on-Tweed. The river drains great part of Peeblesshire, traverses the n. districts of Selkirk and Roxburgh shires, and forms in its lower course the boundary between Berwickshire on the n.w. and the English border-land on the s.e. It receives the Ettrick, the Teviot, and the Till from the s.; and the Gala, Leader, and Adder from the n. The T. passes Peebles, Innerleithen, Melrose, Dryburgh Abbey, Kelso, Coldstream, and Berwick, a course of 96 m. (the last 2 m. in England), draining an area estimated at 1,870 sq. m. The T. is tidal as far as Norham Castle, 10 m. from its mouth; but there is little or no navigation above Berwick. The region through which the river flows is singularly picturesque and beautiful, especially in its middle and lower course. Possibly the T. owes its fame more to its historic associations than to the charms of the scenery through which it flows. Traversing the heart of the 'Borders,' it has witnessed many a foray between the warrior-farmers north and south, as well as many a deadly struggle between the rival houses of s. Scotland; and its name is frequent in ballad and story. The T. is famous as a salmon and trout stream.

TWEED, kind of woolen cloth largely made at Galashiels, Hawick, Selkirk, and other places in s. Scotland; hence called *Scotch T.*, to distinguish it from similar fabrics made elsewhere. This kind of cloth was at first known as *tweel* (twill), so called from being woven diagonally; but owing to an accidental misreading of an invoice, *tweel* was superseded by the popular and appropriate name *tweed*. It is of open, soft, flexible texture; differing from English superfine cloth in being less finely spun and less closely woven, but chiefly in not being so thoroughly felted. The manufacture of T. is of comparatively recent date. At the beginning of the 19th c., the weavers of Galashiels, then a mere village, produced, as they had done for more than 200 years, a kind of coarse woolen cloth known as 'Galashiels grays,' made from wool grown on the surrounding hills. Between 1820 and 30 a beginning was made in the manufacture of woolen cloth of the 'shepherd's check' pattern, which fabric, partly through the patronage of Sir Walter Scott and many of his contemporaries, at once became popular under its new name of T. The warmth, comfort, and durability of tweeds, and their suitability for all seasons, gradually led to their being preferred to the hard tartans, Manchester linens, and nankeens of former days, and eventually even to doeskins. The demand rapidly increased, and Galashiels, with 600 inhabitants in 1778, had over 15,000 in 1881. Hawick, Selkirk, and other neighboring places have shared in this prosperity in corresponding degree. Nor has the manufacture confined itself to Tweedside: it has spread n. to Aberdeen, Elgin, and Inverness; s. to Dumfries and into Cumberland; and w. to Stirlingshire and Ayrshire, and even to the Hebrides. The wools used in s. Scotland are chiefly those imported from Australia and the Cape of Good Hope; in other districts, Cheviot, Danish, and other wools also are used. The manufacture of T. is now one of the chief staples of Scotland, its success being due in great measure to the sound quality of the raw material used, as well as to the good taste and practical knowledge of the makers. In 1862 the total annual value of the tweeds made in Scotland was estimated at about $8,000,000. In 1881 it was estimated that the manufactories were capable of turning out tweeds to the annual value of about $27,000,000. About half this sum would represent the value of the wool used.

TWEED, WILLIAM MARCY: politician: 1823, Apr. 3—1878, Apr. 12; b. New York. He learned the trade of chair-making, and worked at it a few years. Having organized the Americus Fire Co. (in the old volunteer fire dept. of the city), of which he was chosen foreman, he acquired great popularity and had much influence in local politics. He was elected a New York alderman 1852, representative in congress 1853, chairman of the board of supervisors 1856, school commissioner 1856–7, deputy street commissioner 1861–70, state senator 1867. He became commissioner of public works 1870, and while in that office organized the 'ring' or combination of municipal officials famed as the Tweed Ring. The city treasury was defrauded of many millions of dollars by means of fraudulent vouchers, double and triple payments for the same work, and by similar practices. The guilt of T. and his associates was proved by documentary evidence secured by the *New York Times*. He was held in $1,000,000 bail in a civil suit brought on behalf of the city 1871, Oct., and was arrested on charge of criminal fraud Dec. He was found guilty on the criminal charge 1873, Nov., and was sentenced to 12 years' imprisonment. Judgment was rendered in the civil suit 1875, Apr., for $6,000,000 with interest. T. escaped from prison 1875 Dec., and fled to Spain, but was extradited. He died a prisoner.

TWEEDLE, v. *twē'dl* [a form of TWIDDLE]: to touch or handle lightly; to twiddle; to wheedle. TWEE'DLING, imp. TWEE'DLED, pp.

TWEEDLEDUM AND TWEEDLEDEE, *twē'dl-dŭm, twē'dl-dē:* a familiar phrase, denoting a distinction without a difference; an attempt to distinguish between things or parts where no difference exists; hair-splitting nonsense.

TWEED'MOUTH: see BERWICK-ON-TWEED.

TWEEL, v. n. *twēl:* same as TWILL (q.v.). TWEEL'ING, imp. TWEELED, pp. *twēld.*

'TWEEN: a contr. of *between*.

TWEER, n. *twē'ėr:* another spelling of TUYERE.

TWEESE, or TWEEZE, n. *twēz* [see *note* under TWEEZERS]: a case of surgical instruments.

TWEEZERS, n. plu. *twē'zėrz* [from the numeral *two:* Swiss, *zwiser*, a forked twig: Swab. *zwisele*, a forked stem]: an instr. consisting of two pointed branches for taking hold of small objects; small nippers or pincers used for plucking out hairs. *Note.*—According to another etymology, *tweezer* is properly an instr. contained in a *tweese* or case of instruments; *tweeze* is a corruption of OF. *estuy;* F. *étui*, a case for instruments, the same word as Sp. *estuche*, a scissors-case, Port. *estojo*, a tweezer-case.

TWELFTH-DAY: see BEAN-KING'S FESTIVAL: EPIPHANY.

TWELVE, n. a. *twĕlv* [AS. *twelf*, twelve: Goth. *tvalif*, twelve--from *tvai*, two; *laibos*, relics: Lith. *dwilika*, twelve—from *dwi*, two; *likti*, to remain over: the idea being the second excess above ten—see *note* under ELEVEN]: the first number after eleven; the sum of two and ten; a dozen. TWELFTH, a. *twĕlfth*, the ordinal of twelve; next in order after the eleventh: N. one part of twelve; in *music*, an interval of an octave and a fifth. TWELVEMONTH, n. a year. TWELVEMO or TWELVES: see under PAPER. TWELFTH-CAKE, a sweet ornamental cake given to friends or visitors on Twelfth-night, 6th January. TWELFTH-DAY, or -TIDE, the twelfth day after Christmas; the festival of the Epiphany (q.v.), or manifestation of Christ to the Gentiles (see BEAN-KING'S FESTIVAL). TWELVEPENCE, n. *-pĕns*, a shilling.

TWELVE APOS'TLES, TEACHING OF THE: see TEACHING OF THE TWELVE APOSTLES.

TWELVE TABLES (L. *Lex* or *Leges Duodecim Tabularum*): the earliest code of Roman law; so called because cut on 12 bronze tablets. According to the ancient account, the code originated B.C. 462, in the proposal of a tribune, C. Terentilius Arsa, for the appointment of five men to draw up a set of laws to limit the *Imperium* (q.v.), of the consuls. After several years of resistance and delay, the senate dispatched, B.C. 454, three commissioners to Greece and the Greek colonies in s. Italy, to report on the laws in force there. After two years they returned; and ten men (*decemviri*) were appointed, with consular power, and under the presidency of Appius Claudius (q.v.), to draw up a code (*legibus scribundis*). In B.C. 451 the code was finished, was passed into law by the Comitia (q.v.) of the centuries, engraved on ten tables of wood, and set up in the Forum. In the following year, the decemvirate having been reappointed, two other tables of supplementary matter were added: see DECEMVIR. Some provisions of the T. T. correspond to laws observed in Greece, and several are almost literal renderings of parts of the laws of Solon (q.v.). This has led some to regard the T. T. as an eclectic assortment of foreign laws; but modern investigators are now agreed that they are in the main native and original, and express the first effort in the way of codifying the consuetudinary laws of the Latin race.

According to Livy (iii. 57) and Diodorus (xii. 56), the laws of the T. T. were cut on bronze tablets and put up in a public place. Whether these tablets were destroyed by the Gauls when they sacked and burned Rome B.C. 390 is uncertain. But the later Romans entertained no doubt that the collection which existed in their time was genuine; and Cicero tells us that in his youth school-children were required to commit them to memory. The only portions extant are those which have been quoted by jurists and others. The T. T. are described by Livy (iii. 34) as the *fons publici privatique juris*—the fountain of public and private law; and Cicero (*De Or.*, I. 43, 44) speaks of them with high praise. In the course of years, the *Jus Publicum*, as could not fail to be the case, was greatly changed; but the *Jus Privatum* of the T. T. continued to be the fundamental law of the Roman state. See article 'Lex,' in Smith's *Dic. of Gr. and Rom. Ant.;* Niebuhr's *Lect. Rom. Hist.* (Eng. transl., I. 295–319); Mommsen's *Hist. of Rome;* and the relevant portions of Ihne's and Duruy's histories. The work of Dirksen (*Uebersicht der bisherigen Versuche*, etc.) on the subject and his ed. of the fragments (1824) deserve notice; also the edition by Schöll (1866), and that by Bruns in *Fontes Juris Romani* (3d ed. 1876).

TWENTY, n. a. *twĕn'tĭ* [Ger. *zwanzig;* Icel. *tuttugu*, twenty: Goth. *tvaitigjus*, twenty—from *tvai*, two; *tigjus*, the sum or number of ten: AS. *twentig*, twenty (see EIGHTY, under EIGHT)]: one more than nineteen; a score; a proverbial or an indefinite number. TWEN'TIETH, a. *-ĕth*, the ordinal of twenty: N. one of twenty equal parts. TWENTY-FOLD, a. twenty times as many or as much. TWENTY-FOURMO, or TWENTY-FOURS; see under PAPER.

TWIBILL, or **Twybill**, n. *twī'bĭl* [from *two*, and *bill* 1]: in *prov.* and *OE.*, a two-edged bill or mattock.

TWICE, ad. *twīs* [OE. *twies*—from *two:* AS. *twiwa*, twice]: two times; once and again; doubly.

TWICKENHAM, *twĭk'ĕn-am:* town in Middlesex co., England; on the n. bank of the Thames, and on the London and Southwestern railway; 11¼ m. s.w. of London. It is opposite Richmond, and connected with it by a stone bridge. It contains a free library, a museum, a school for the daughters of naval and marine officers, and several charitable institutions. T. is noted for the beauty of its suburban residences and for its famous old historical buildings, among which are Strawberry Hill, the residence of Horace Walpole, and York House, the residence of James II. when Duke of York. It was the home of Pope, who is buried here.—Pop. (1881) 12,479; (1891) 16,026.

TWIDDLE, v. *twĭd'dl* [a word imitative of a quivering motion]: to touch lightly; to play with a tremulous quivering motion; to twirl: N. a twist of the fingers. **Twid'dling**, imp. *-dlĭng*. **Twiddled**, pp. *twĭd'dld*.

TWIFOLD, or **Twyfold**: OE. for **Twofold**.

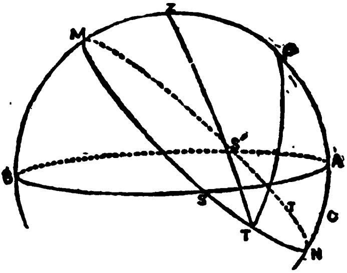
TWIG, n. *twĭg* [Low Ger. *twieg;* Ger. *zweig*, a twig—from *zwei*, two: Dan. *tvege*, a forked branch]: a small shoot or branch of a tree or bush. **Twig'gy**, a. *-gĭ*, full of twigs; abounding with shoots. **Twig'gen**, a. *-gĕn*, made of, or cased in, twigs.

TWIG, v. *twĭg* [Gael. *tuig*, to understand, to discern]: in *old* and *familiar Eng.*, to understand, as a person's motives and meaning; to comprehend; to watch; to observe; to notice. **Twig'ging**, imp. **Twigged**, pp. *twĭgd*.

TWIGGS, *twĭgz*, **David Emanuel**: soldier: 1790–1862, Sep. 15; b. Richmond co., Ga. He served in the war of 1812; he had attained the rank of brig.gen. in the U. S. army 1846; won high distinction at the battles of Palo Alto and Resaca de la Palma in the Mexican war, in both of which actions he commanded the right wing; for gallantry at Monterey he was brevetted maj.gen. 1848, and presented by congress with a sword. He adhered to the southern Confederacy in the civil war, at the outbreak of which he surrendered to the state of Texas Federal war material and troops that were under his command. He was appointed maj.gen. in the Confederate army 1861, May, but resigned before the end of the year.

TWILIGHT, n. *twī'līt* [AS. *tweon-leoht*, twilight—from *tweon*, doubt, hovering between two things—from *twi*, double; *leoht*, light (see **Light**)]: the faint light perceived before sunrise and after sunset; uncertain view; obscure light: Adj. faint; obscure; deeply shaded; imperfectly illuminated.

TWI'LIGHT: light from the sky which is perceived during the transition from night to day (usually called 'dawn'), but specifically from day to night, the length of the transition period varying with the latitude of the place and the declination of the sun. If the earth had no atmosphere, we should be in total darkness from the instant of sunset until the instant of sunrise. T. is simply sunlight reflected by the air and the clouds and dust and vapors suspended in it, the sun being not more than 18° below the horizon. The question of the duration of T. is, therefore, simply reduced to this: How long after sunset does the sun reach a position 18° below the horizon of a given place? And this can be answered by calculation in spherical trigonometry. Thus, if Z be the zenith, P the pole of the heavens, ASB the horizon, and MSTN the (small) circle which the sun describes about the pole, there is twilight while the sun moves from T to S. ZT being an arc of 108°. In the spherical triangle ZPT, we know the three sides, for ZP is the co-latitude (or complement of the latitude, or the difference between the latitude expressed in degrees, and 90°) of the place, PT the sun's polar distance, and ZT is 108°. Hence we can calculate the angle ZPT, which is the sun's *hour-angle;* and from this we find how long before or after noon the sun passes the point T. If ZT′ be also 108°, we see that it is night while the sun moves from T′ to T, day while it moves from S (through M, its meridian position) to S′, morning twilight or 'dawn' from T to S, and evening twilight from S′ to T′. Make ZC = 108°, then, if PN be less than PC, but greater than PA, there will be no point of the sun's path (MS′NS) so far as 108° from Z; therefore the points T and T′ will not exist. In this case the sun will set and rise, but there will be *no night,* or, rather, twilight will occupy the whole interval from sunset to sunrise. This cannot occur in low latitudes, but does occur during certain periods of the year in extreme n. and s. countries. For



PN is 90° — sun's declination,
PC is latitude + 18°,

and our condition is, therefore, that 90° — sun's declination, while greater than the latitude, does not exceed it by more than 18°. Or, in a simpler form, the latitude, together with the sun's declination, must lie between 90° and 72°. Now, the sun's greatest declination is about 23° 30′; therefore, in lat. 48° 30′ (72° — 23° 30′) there will be one night in the year (at the summer solstice) consisting wholly of twilight; for higher latitudes, more; and for lower, none.

Some curious problems on this subject, such as the finding the time of year at which the twilight is longest in a given latitude, were among the early triumphs of the differential calculus.—A curious phenomenon, the *afterglow*, or second twilight, often seen in the Nubian desert, is referred by Sir John Herschel to a *second* reflection of solar light in the atmosphere. Lambert and others had previously speculated on the possibility of second and even third twilights, but in their time there was no record of such appearances.

TWILL, v. *twil*, or TWEEL, v. *twēl* [Ger. *zwillich*, ticking: Low Ger. *twillen*, to make double—from the root of *two*, which see]: to weave cloth so as to produce the appearance of diagonal lines or ribs on its surface: N. cloth having a kind of diagonal ribbed appearance on the surface, produced in weaving by passing the weft over one and under two or more warp-threads. Twills are called *three-leaf twill*, *six-leaf twill*, etc., according to the number of heddles used. TWILL'ING, imp. TWILLED, pp. *twild:* ADJ. woven in such a manner as to produce the appearance of diagonal ribs on the surface.

TWIN, n. *twĭn*, generally used in plural TWINS, *twĭns* [Ger. *zwilling;* OHG. *zwinilinc*, twin: Lith. *dwyni*, twins: comp. L. *bini*, two at a time—from *bis*, twice]: one of two young produced at a birth by an animal that usually brings forth only one; one very much resembling another: in *mineral.*, one of two crystals so joined that by revolving 180° round a common axis one would come into the space occupied by the other (see TWINNING): V. in *OE.*, to be born at the same birth; to be paired; to bring forth twins: ADJ. denoting one of two produced at a birth; very much resembling. TWINNED, a. *twĭnd*, in *OE.*, born at the same birth; like as twins; paired. TWIN'LING, n. *-ling*, a twin lamb. TWIN-BORN, produced at the same birth. TWIN-BROTHER, a brother being one of two (either both male, or one male and the other female) produced at the same birth. TWIN-FLOWER, an elegant little creeping evergreen plant; *Linnæa boreālis*, ord. *Caprifoliācēæ.* TWIN-LIKENESS, near resemblance. THE TWINS, a sign of the zodiac; Gemini.

TWINE, v. *twīn* [Dut. *twijn;* Icel. *tvinni*, twine: Icel. *tvinna;* Dan. *twinde*, to twine, to double]: to twist; to wind around another, as a thread or cord; to wind or twist anything flexible around something else; to unite closely, as by twisting; to embrace; wreathe; coil; wind: N. a strong thread composed of two or three smaller threads twisted together; cord; a twist; an embrace. TWIN'ING, imp.: ADJ. ascending spirally around a stem, a branch, or a prop; uniting closely to; embracing. TWINED, pp. *twīnd.*

TWINGE, v. *twĭnj* [a nasalized form of TWITCH, which see: Sw. *tvinga*, to restrain: Dut. *dwingen;* Ger. *zwingen*, to constrain]: to affect with a sharp, sudden, passing pain; to pinch; to be affected with sharp sudden pains of short duration: N. a sudden, sharp, passing pain; a pinch; a sudden rebuke, as of conscience. TWING'ING, imp.: N. the act of pinching with a sudden twitch; a sharp passing pain. TWINGED, pp. *twĭnjd.*

TWINK, v. n.: see Twinkle.

TWINKLE, v. *twing'kl*, or Twink, v. *twingk* [AS. *twinclian*, to twinkle, a nasalized form from *twiccan*, to twitch, expressive of continued twitching or quivering, hence to twinkle (see Twitch): Swiss, *zwyggen*, to twitter; *zwinken*, to wink, to twinkle]: to flash or sparkle at short intervals; to shine with a tremulous or quivering light; to sparkle; to open and shut the eye by turns: N. a shining with a tremulous or quivering light; a motion of the eye; a wink; the time occupied by a motion of the eye; an instant. Twin'kling, imp. *-kling:* Adj. shining with a twinkle: N. a scintillation; a flash; a very short time; a moment; an instant. Twinkled, pp. *twing'kld.*

TWINNING, n. *twin'ing:* in *mineral.*, a form of irregular crystallization in which two or more crystals or parts of crystals are united, but in reversed positions to one another, into one group or compound crystal, by contact or apposition (as in spinel), by intersection (as in staurolite), by penetration (as in calcite), or by incorporation (as in quartz).

TWIRE, v. *twir* [Gael. *tuir*, to chant, to sing: F. *tirelire*, expressive of the singing of the lark: Bav. *zwiren*, to spy]: in *OE.*, primarily 'to sing,' then 'to peep, to look in furtively;' to chirp; to twitter; to twinkle; to be in a kind of flutter; to leer; to simper. Twir'ing, imp. Twired, pp. *twird.*

TWIRL, v. *twérl* [MHG. *twirel*, that which turns rapidly round: Dut. *dwarlen*, to whirl: Swiss, *zwirlen*, to twirl: Bav. *zweren*, to stir; *zwirel*, a stirrer]: to turn round rapidly; to whirl; to cause to rotate with rapidity, particularly with the fingers; to twist: N. a rapid circular motion; quick rotation; twist. Twirl'ing, imp.: N. act of that which twirls; a rapid circular motion. Twirled, pp. *twérld.*

TWIST, v. *twist* [AS. *twi*, double: Dut. *twisten*, to double or unite two threads, to quarrel: Dut. *twist;* Ger. *zwist*, a twist, discord, quarrel]: to unite by winding one thread or other flexible substance round another; to form by winding separate things round each other; to encircle; to turn from a straight line; to contort; to be united by winding round each other; to pervert: N. manner of twisting; a cord, thread, or the like, formed by winding separate parts round each other; a contortion; silk in hanks, balls, or reels, for sewing; a kind of tobacco manufactured in twist form; a bending from a straight line; an obliquity or peculiarity in intellect or disposition. Twist'ing, imp.: Adj. forming convolutions; becoming contorted: N. convolution; contortion. Twist'ingly, ad. Twist'ed, pp.: Adj. formed by winding threads or strands round each other. Twist'er, n. one who or that which twists; a rope or twine maker.

TWIT, v. *twit* [AS. *ætwitan*, to reproach—from *æt*, at; *witan*, to blame: Icel. *vita*, to reprove, to fine]: to vex or annoy by bringing to remembrance a fault, imperfection, or the like; to upbraid; to taunt. Twit'ting, imp. Twit'ted, pp. Twit'tingly, ad. *-li*, with reproach; upbraidingly. Twit'ter, n. *-tér*, one who twits.

TWITCH, v. *twĭch* [Ger. *zwicken*, to pluck, to pinch; *zwick*, a pinch: Low Ger. *twikken*, to twitch, to pluck]: to pull with a sudden jerk; to snatch: N. a pull with a sudden jerk; a spasmodic contraction of the muscles, of extremely short duration; a place in a mine where the vein diminishes and almost disappears. **Twitch'ing**, imp.: Adj. pulling with a jerk; suffering short spasmodic contractions: N. the act of pulling with a jerk; the act of suffering short spasmodic contractions; a twitch. **Twitched**, pp. *twĭcht.* **Twitch'er**, n. *-ėr*, one who or that which twitches. **Twitch-grass** [a form of *quitch*—from *quick*, in the sense of living (see Couch Grass)]: a species of grass difficult to root out and destroy; couch-grass; *Triticum repens*, ord. *Graminĕæ.*

TWITE, n. *twīt* [imitative of its cry]: the mountain-linnet.

TWITTER, v. *twĭt'tėr* [imitative of sharp broken sounds like the notes of a little bird: Ger. *zwitschern*, to twitter: Swiss, *zwitzern*, to flicker: Bav. *zwitzern*, to gnash the teeth, to tremble: Dut. *kwetteren*, to twitter, chatter]: to make a succession of small tremulous sounds like a swallow or other small bird; to feel a slight trembling of the nerves; in *OE.*, to titter: N. a small tremulous noise, as of a swallow; a slight trembling of the nerves; in *OE.*, a titter. **Twit'tering**, imp.: N. the act of uttering a succession of small sounds. **Twit'tered**, pp. *-tėrd.*

'TWIXT, *twĭkst:* a contracted form of Betwixt.

TWO, a. and n. *tô* [AS. *twa;* Ger. *zwei;* Dan. *to;* Dut. *twee;* Goth. *twai;* Ir. and Gael. *da;* Gr. and L. *duo;* Russ. *dwa;* Skr. *dvau*, two]: one and one; the number after one. **Two-edged**, a. having edges on both sides, as a sword. **Two-faced**, having a face both in front and behind, as the Roman god Janus (q.v.); hence, insincere; given to double-dealing. **Twofold**, a. two of the same kind: duplicate; pertaining to two different things existing together: Ad. in a double degree. **Two-foot**, a. that can measure two feet. **Two-handed**, a. requiring two hands to grasp, as a sword; stout and strong; large; dexterous. **Two-masted**, a. having two masts, as a ship. **Twopenny**, a. *tŭp'pĕn-nĭ*, of the value of *twopence.* **Twopence**, n. *tô'pĕns* or *tŭp'pĕns*, sum amounting to two pennies. **Two-ply**, a. consisting of two thicknesses; consisting of two strands twisted together, as thread. **Two-tongued**, a. double-tongued; deceitful.

TWYBILL: see Twibill.

TWYER, n. *twī'ėr:* same as Tuyere.

TYBEE, *tī-bē':* island and sound at the mouth of the Savannah river, Georgia. The Sound is a bay of the Atlantic, extending from T. Island on the s. to Hilton Head on the n., opening to Port Royal entrance by Cooper's river, Wall's Cut, Lazaretto creek, and other channels. The island is 6 m. long by 3 wide, and was occupied 1861 by Gen. Sherman, who erected batteries for the reduction of Fort Pulaski, which capitulated 1862, Apr. 11.

TYBURN, *tĭ'bėrn:* chief place of execution of the death-sentence in London prior to 1783; near the n.e. corner of Hyde Park, w. extremity of Oxford street, where Edgeware and Uxbridge roads unite. T. took its name from a small stream which ran from Hampstead to the Thames through St. James's Park, but which long ago disappeared. The gallows seems to have been a permanent erection, resting on three posts, whence the phrase 'Tyburn's triple tree.' Wooden galleries were erected near for accommodation of spectators. The criminal was conveyed from Newgate to T., about 2 m., by Holborn and the T. road, now Oxford street, but in the 17th c. a 'sloughy country road.' As London spread westward, the long procession became inconvenient, and the place of execution was, 1783, Dec. 9, removed to the Old Bailey, or Newgate, where it continued till the close of 1884.

In early times the frequency of executions rendered the office of executioner more important than it is now. During the reign of Henry VIII. (38 years) the average number of executions in England was 2,000 per annum. In the 19th c. the number has sunk to about 12. The first executioner of whom we have record was 'one Bull,' 1593. He was succeeded by Derrick, referred to in the *Fortunes of Nigel*, and mentioned in a political broadside as living in 1647. In the ballad of *The Penitent Tailor*, pub. in the same year, reference is made to his successor, Gregory Brandon—

'I had been better to have lived in beggary,
Than to have fallen into the hands of Gregory.'

In Gregory's time it was the custom to prefix 'squire' to the names of the T. hangmen. This is said to have originated in a practical joke played on the garter king-of-arms. He was induced to certify the authenticity of a coat-of-arms of a gentleman named Gregory Brandon, supposed to reside in Spain, but who turned out to be the 'hangman.' The garter king was sent to prison for his negligence; hence the popular error that 'an executioner who has beheaded a state prisoner becomes an esquire.' Gregory was succeeded by his son Richard. 'Squire Dun' followed; and after him came Jack Ketch, or Squire Ketch, mentioned first 1678. It was he who beheaded Lord Russell and the Duke of Monmouth. Lord Macaulay, in speaking of the latter execution, says: 'He then accosted Jack Ketch, the executioner, a wretch whose name has, during a century and a half, been vulgarly given to all who have succeeded him in his odious office. "Here," said the duke, "are six guineas for you. Do not hack me, as you did my Lord Russell. I have heard that you struck him three or four times. My servant will give you some gold if you do the work well."' (*History of England*, II. 205.) After this time the 'kings of Tyburn' all received the name of Ketch. Jack Ketch's immediate successor was 'one Rose, a butcher;' and the last of the T. hangmen was Edward Dennis, condemned for taking part in the No-Popery Riots, but respited, it is said because his services could not be dispensed with.

Among the most memorable executions at T. were those of Elizabeth Barton, the Holy Maid of Kent, and her confederates (1534); John Felton, murderer of the Duke of Buckingham (1628); Jack Sheppard, the highwayman (1724); Jonathan Wild, the thief-catcher (1725); Mrs. Brownrigg, murderer of an apprentice (1766); Dr. Dodd (q.v.), found guilty of forging a bond for £4,200 (1777); and the Rev. Henry Hackman, murderer of Miss Reay (1779). T. has naturally been avoided as a street-name in London; but it survives in Thackeray, who described a certain quarter of the metropolis as 'the elegant, the prosperous, the polite Tyburnia, the most respectable district in the habitable globe.'—See Chambers's *Book of Days*, II.; *Notes and Queries*, 2d series, II.—See CAPITAL PUNISHMENT: EXECUTIONER: EXECUTION OF THE DEATH-SENTENCE.

TY'BURN-TICKET: a certificate formerly granted in London, under statute William III. (10, 10, c. 23), to a prosecutor who had secured a capital conviction against a criminal, exempting the holder from parish and ward offices with the parish in which the felony had been committed. These tickets were enrolled with the clerk of the peace, and sold like any other property. The privilege that the tickets conferred must have been highly valued, as they sold at a high price. 'Last week,' says the *Stamford Mercury*, 1818, Mar. 27, 'a Tyburn ticket sold in Manchester for £280.' The act under which they were granted was repealed a few months later, 1818, June 8; and they are no longer recognized.—See *Notes and Queries*, 2d series, XI.

TYBURN-TREE, n. *tī'bėrn-trē* [*Tyburn*, London, where felons were formerly hanged]: the gallows (see TYBURN).

TYCOON, n. *tī-kôn'* [Jap. pronunciation of Chinese *ta-kiun*, 'great prince']: the title or style assumed by Iyesada, the Shogun (q.v.) with whom Commodore Perry, on behalf of the United States, concluded a treaty with Japan, and whom both the United States government (in a letter sent by Perry) and Perry himself addressed as 'emperor'—a title to which no shogun had any right, being only a servant of the mikado or emperor. The title *tycoon* was never recognized by the Japanese, but was the common designation of the shogun among foreigners down to the abolition of the shogunate in 1868. Iyesada, however, was not the first to use the title *tai-kun*, for in the middle of the 17th c. it was applied to one of his predecessors (Iyemitsû, the third shogun, 1623–49), in a letter sent by his government to Corea.

TYE, *tī*, CHRISTOPHER: English musician of the 16th c.; b. 1500, at Westminster. He was educated in the King's Chapel, and held the office of musical instructor to Edward VI. when Prince of Wales. He received the degree musical doctor from the Univ. of Cambridge 1545 and from Oxford 1548. Under Elizabeth, he was organist to the Chapel Royal, and produced various services and anthems, some of which are yet in repute among musicians.

TYING, v. *tī'ĭng:* imp. of the verb TIE, which see binding; fastening: N. in *mining*, the process of washing ores.

TYKE, n. *tīk:* see TIKE.

TYLDESLEY, *tĭl-dĕs'lĭ*, WITH **SHAKERLEY**, *shăk'ĕr-lĭ:* town of Lancaster co., England; 11 m. w.n.w. of Manchester, 199 m. n.w. of London; on the London and Northwestern railway. It is a modern town, having had its rise and growth within the 19th c. Its chief industries are connected with its cotton-mills and the extensive coal mines near it. It contains the handsome church of St. George, built 1827 in the Early Pointed style.—Pop. (1881) 9,954; (1891) 12,891.

TYLER, n. *tīl'ėr:* see under TILE.

TYLER, *tī'lėr:* city, cap. of Smith co., Tex.; on the International and Great Northern, the St. Louis Arkansas and Texas, and the Gulf Short Line railroads; 19 m. n.w. of Troupe, 250 m. n. of Galveston. It is in an agricultural region; is the seat of the U. S. dist. and circuit courts, and the state supreme court for the e. dist. of Tex.; and contains co. court-house, public library, 6 churches, Charnwood Institute, the headquarters of the Gulf Short Line railroad, 2 national banks (cap. $300,000), 1 private bank, and 1 daily and 2 weekly newspapers.—Pop. (1880) 2,423; (1890) 6,908.

TY'LER, BENNET, D.D.: Congregational minister: 1783, July 10—1858, May 14; b. Middlebury, Conn. He graduated at Yale College 1804; studied theol.; was pastor of the Congl. church in South Britain, Conn., 1808–22; pres. of Dartmouth College 1822–28; pastor of the Second Congl. Church in Portland, Me., 1828–33; and pres. and prof. of Christian theol. in the new theol. seminary in East Windsor, Conn. (now at Hartford), from 1833 till his death. He was a strongly logical reasoner and an earnest adherent to Calvinistic doctrine; and was one of the leaders in opposition to the 'new divinity' taught in the Yale Divinity School under Dr. Taylor; was author of several historical, doctrinal, and controversial works; and received his degree from Middlebury College 1823.

TY'LER, JOHN. tenth president of the United States: 1790, Mar. 29—1862, Jan. 18; b. Charles City co., Va.; son of an officer of the army in the revolution, and a judge of the federal court of admiralty. He entered William and Mary College at the age of 12, graduated at 17, was admitted to the bar at 19, and almost immediately entered on a large practice. At the age of 21 he was elected to the state legislature, supporting the policy of Jefferson, Madison, and the democratic party. He was elected five times almost unanimously; and entered congress 1816. During his long congressional career, he sustained all the measures of the states'-rights party. He was elected gov. of Va. 1825, and U. S. senator 1827. He supported Gen. Jackson (q.v.) and the democratic policy; but sided with Calhoun on the question of Nullification (q.v.). At a later period, however, 1833–4, he supported Clay's resolutions of censure on Gen. Jackson for removing the govt. deposits from the U. S. Bank. From this period he became an active adherent of Henry Clay, the candidate of the whig or republican party; and was elected vice-pres. of the United States 1840, with Gen. William H. Harrison as pres. Pres. Harrison died 1841, Apr. 4, a month after his inauguration; T. thus became pres. He began his administration by removing democrats from office, and appointing whigs, and pronouncing in favor of whig measures; but soon afterward vetoed a bill for a U. S. bank, passed by congress, as he believed that congress had no power to create such a corporation within the limits of a state without the consent of that state. Several members of his cabinet resigned; and, after some changes, John C. Calhoun, the great southern democratic statesman, became sec. of state. T.'s administration was on extreme democratic lines, opposed to the party which had elected him. The most important act of his administration was the annexation of Texas, 1845, Mar. 1. At the close of his term of office, he retired to private life until 1861, when he was pres. of a peace convention at Washington. Failing in his efforts at a compromise, he gave his adhesion to the Confederate cause, and was a member of the Confederate congress until his death, at Richmond.

T. married Letitia (1790, Nov. 12—1842, Sep. 9), daughter of Robert Christian, a planter of Va. She removed to Washington with her husband 1842, but died shortly afterward—the duties of mistress of the White House devolving on her daughter-in-law, Mrs. Robert Tyler.

TY'LER, Moses Coit, LL.D., L.H.D.: educator: b. Griswold, Conn., 1835, Aug. 2. He graduated at Yale College 1857, and at the Andover Theol. Seminary 1860; was pastor of the First Congl. Church in Poughkeepsie, N. Y., 1860–62; engaged in lecturing, study, and literary work in England 1863–67; was prof. of the Eng. language and literature in the Univ. of Mich. 1867–81; and since 1881 has been prof. of American history in Cornell Univ. He was ordained deacon in the Prot. Episc. Church 1881, and priest 1883, and received the degree LL.D. from Wooster Univ. 1875, and L.H.D. from Columbia College 1888.

TY'LER, Robert Ogden: milit. officer: 1831, Dec. 22—1874, Dec. 1; b. Greene co., N. Y. He graduated at the U. S. Milit. Acad. 1853; entered the army as brevet. 2d lieut. of artil.; served principally on the w. frontier till 1860, when he was transferred to New York. In the civil war he took part in the expedition for the relief of Fort Sumter; in reopening communication between Washington and Baltimore; in the defense of Washington; in the Va. peninsular campaign; and in the principal operations of the Army of the Potomac. He was promoted brig.gen. of vols. 1862; brevetted brig.gen. and maj.gen. U. S. A. at the close of the war; and was afterward transferred to the quartermaster's dept., with rank of lieut.colonel.

TY′LER, ROYALL: jurist: 1757, July 18—1826, Aug. 16; b. Boston. He graduated at Harvard College 1776; studied law with John Adams; served a short time in the revolutionary war and in the Shays rebellion; settled in Guilford, Vt., to practice law 1790; and was judge of the state supreme court 1794–1800, and chief justice 1800–06. T. was one of the earliest American dramatists and humorists, and a frequent contributor of prose and verse to the periodicals of his day.

TY′LER, WILLIAM SEYMOUR, D.D., LL.D.: classical teacher and author: b. Hartford, N. Y., 1810, Sep. 2. Since 1826, except two years at Andover Theol. Seminary, he has been connected with Amherst Coll. as student (graduating 1830), tutor, and prof., his chair being that of Greek lang. and lit., and for the first few years including Latin also. He is widely known as a learned writer for reviews and as a forcible preacher. Beloved by students, he has repeatedly been acting pres. during his 55 years' professorship. Besides his annotated text-book editions of Tacitus, Plato, Homer, and Demosthenes, he has published a prize essay, *Prayer for Colleges* (1854); *Memoir of Dr. Henry Lobdell* (1859); *Theology of the Greek Poets* (1867); *Plutarch on the Delay of the Deity* (1867); and *History of Amherst College* (1873).

TY′LER INSURREC′TION: see WAT TYLER INSURRECTION.

TYLOPHORA, *tī-lŏf′o-ra:* genus of plants, of nat. order *Asclepiadaceæ*, natives of the E. Indies, New Holland, etc.; with wheel-shaped corolla and five-leaved fleshy coronet. *T. asthmatica*, native of the coast of Coromandel, has high reputation as a medicinal plant: its root has properties like those of ipecacuanha, and has been found of great use in dysentery.

TYLOR, *tī′lėr*, **EDWARD BURNETT, D.C.L., LL.D.**: antiquarian and ethnologist: b. London, 1832, Oct. 2. He was educated at the Friends' School, Tottenham. His researches have been concerned with the study of human races, their history, languages, and customs. He became keeper of the museum of Oxford Univ. 1883; later, reader in anthropology in that univ.; Gifford lecturer in Aberdeen Univ. 1888. He is author of *Anahuac, or Mexico*, etc.; *Researches into the Hist. of Mankind; Primitive Culture; Anthropology: an Introduction to the Study of Man and Civilization*.

TYMBAL, n. *tĭm′băl:* see TIMBAL.

TYMPAN, n. *tĭm′păn* [F. *tympan*—from L. *tympănum;* Gr. *tumpănon*, a drum, a timbrel—from *tuptō*, I strike: It. *timpano*]: in a platen *printing-press*, the parchment frame on which the sheet of paper is laid before being turned over on the form of type to be printed. TYMPANUM, n. *tĭm′pă-nŭm*, a drum-shaped wheel with spirally curved partitions, used for raising water for the purposes of irrigation: in *anat.*, the outer membranous wall of the middle cavity of the ear, familiarly called the drum of the Ear (q.v.); the cavity itself: in *arch.*, the naked face of a pediment, usually a triangular space or table in the corners or sides of an arch, often enriched with figures; the die of a pedestal: the panel of a door. in *bot.*, a membrane which stretches across the mouth of the spore-case of some urn-mosses. **Tympanic**, a. *tĭm-păn'ĭk*, or **Tym'panal**, a. *-pă-năl*, belonging to the tympanum or drum of the ear. **Tympanize**, v. *tĭm'pă-nīz*, to stretch, as the skin over a drum-head. **Tym'panizing**, imp. **Tym'panized**, pp. *-nīzd*. **Tym'panites**, n. *-pă-nī'tēz*, or **Tym'pany**, n. *-pă-nĭ*, in *med.*, a flatulent distention of the abdomen. **Tym'panit'ic**, a. *-nĭt'ĭk*, relating to, of the nature of, or affected with tympanites.

TYNDALE, *tĭn'dal* (or **Tindale**), **William**: eminent English reformer and martyr, translator of the New Test. and the Pentateuch: about 1484–1536; b. Gloucestershire. He was educated first at Oxford, afterward at Cambridge, and was from his youth, as Foxe says, 'singularly addicted to the study of the Scriptures.' After leaving Cambridge, he became tutor and chaplain in the house of Sir John Walsh, a knight of Gloucestershire, where his religious debates with the clerical dignitaries of the neighborhood soon aroused their wrath. He went to London about the middle of 1523, bent on fulfilling his long-cherished desire of translating the New Test. into English. Finding publication impossible in England, he retired to Germany 1524, visited Luther, and fled from place to place under persecution, completing his transl. and publication of the New Test. at Worms 1526. This work was conveyed into England, and, though denounced by government, was yet so eagerly received by the people that several reprints were produced by the Dutch printers in the next few years. T. continued on the continent, writing tracts in advocacy of the Reformed doctrines; in 1530 he published his transl. of the Pentateuch, and 1531 one of the prophet Jonah. From 1530 he appears to have dwelt chiefly in Antwerp, where, 1534 and 5, he pub. two revised editions of his New Test. He was continuously the subject of plots, and 1535 he was treacherously arrested, and after a confinement of 16 months in the castle of Vilvorde, near Brussels, was publicly strangled as a heretic, and his body afterward burned at the stake at Antwerp.—T. was a man of great learning and talent; and his writings, in addition to his translations, show how well adapted he was for the great work of his life, so fearlessly carried out. Our modern (King James's) version of the New Test. is usually regarded as substantially T.'s transl. with modernized spelling: see **Bible, The**.—For bibliography, see Introduction to Mombert's critical reprint of T.'s Pentateuch (New York 1884): for biography, see *William Tyndale*, by Rev. R. Demaus, M.A. (1871).

TYNDALL, *tĭn'dal*, **John**, LL.D.: physicist: b. 1820, Aug. 21, at Leighlin Bridge, county Carlow, Ireland. He had few educational advantages. On returning from the continent, where he received part of his education, he found employment in one of the subordinate grades of the ordnance survey. He was afterward appointed teacher of nat. philos. at Queenwood College, Hampshire, and there began those original investigations which have distinguished him among explorers of science. 1853, Jan., he communicated his first paper to the Royal Soc., *On Molecular Influences—Transmission of Heat through Organic Structures.* It shows much of that skill in experimenting and fertility of resource which characterize his subsequent researches, and illustrates important questions in natural philosophy. Year by year, T. has extended scientific knowledge. His field of research is wide and varied, as exemplified by the subjects of his papers in *Philosophical Transactions: On the Vibrations and Tones produced by the Contact of Bodies having Different Temperatures* (1854); *On the Physical Phenomena of Glaciers* (1857); *On Some Physical Properties of Ice* (1858–9); *On Transmission of Heat through Gaseous Bodies* (1859); series on *Radiation*, six papers (1861–65); *On Calorescence* (1865); *On the Invisible Radiation of the Electric Light* (1865). In 1867 he lectured on *Sounding and Sensitive Flames.* In 1855 and 61 T. was appointed to deliver the Bakerian lecture to the Royal Soc.; the subjects were: *On the Nature of the Force by which Bodies are repelled from the Poles of a Magnet;* and *On the Absorption and Radiation of Heat by Gases and Vapors, and on the Physical Connection of Radiation, Absorption, and Conduction*, the latter being one of the series on *Radiation* above mentioned. The publication of this series marks an epoch in scientific research, for the facts and conclusions therein set forth demonstrate the relation of aqueous vapor to radiant heat, and elucidate meteorological phenomena connected with some of the profoundest and most interesting questions of cosmical science.

In 1864 the Council of the Royal Soc. awarded to T. their Rumford medal, in recognition of his scientific researches, particularly as bearing on Light and Heat. As lecturer on scientific subjects he had high reputation: his lectures at the Royal Institution and the School of Mines are marked by fulness of knowledge and clearness of illustration: he experimented with and wrote on germs and on the acoustic transparency or cloudiness of the atmosphere, and on many other subjects. In 1852 T. was elected a fellow of the Royal Soc. In 1853 he was appointed prof. of nat. philos. in the Royal Institution, where, as successor to Davy and Faraday, he sustained the reputation of the place for original research. His lectures at the School of Mines were attended by crowds of working-men. His lines of study and thought were essentially in the natural sciences, and some of his occasional excursions into the regions of metaphysics or theology have not shown his powers at their best. He was LL.D. of Cambridge, and a member of a number of scientific societies on the continent. He was chosen pres. of the Brit. Assoc. 1874. Besides his papers for the Royal Soc., T. wrote articles in the *Philosophical Magazine* and *The Fortnightly Review.* Among his many separate works are: *The Glaciers of the Alps, being a Narrative of Excursions and Events* (1860); *Mountaineering in 1861* (1862); *Heat considered as a Mode of Motion* (2d ed. 1865); *Radiation*, the Rede lecture at Cambridge 1865; *Lectures on Sound* (1867); memoir of Prof. Faraday (1868); *Fragments of Science*, and *Hours of Exercise in the Alps* (1871); *Six Lectures on Light* (1873); *Address delivered before the British Association in 1874, with Additions* (1874); *Essays on the Floating Matter of the Air* (1881). He d. 1893, Dec. 4.

TYNDARIDÆ, n. plu. *tĭn-dăr'ĭ-dē* [L., the sons of Tyndarus: Gr. *Tundareos, Tundaros*]: in *class. myth.*, Castor and Pollux (q.v.), sons of Tyndarus, King of Lacedæmon.

TYNE, *tīn:* river in n. England, formed by confluence of two head-waters—the North T. and the South T. The N. T. rises on the Scottish border, 11 m. s.e. of Hawick, flows s. across Keelder Moor, and s.e. to Hexham, after traversing a district of picturesque villages and gentlemen's seats. Its chief affluent is the Reed, which rises on Carter Fell and flows s.e. past Otterburn to Bellingham, where it joins the larger stream. Near Hexham the N. T. is joined by the S. T., which rises on the slopes of Cross Fell, 11 m. n. of Appleby, in Westmoreland, flows n. to Haltwhistle, thence e. to Hexham, through a district abounding in old castles and peel-houses. From the junction of the two head-waters, the T. flows e. through s. Northumberland, which presents charming scenery and is studded with castles and country seats. At Blaydon—about 8 m. above Newcastle—navigation begins, and from this point, passing Newcastle (q.v.), Gateshead (q.v.), N. Shields (q.v.), and S. Shields (q.v.), its banks are lined with foundries, furnaces, docks, wharves, and quays. Total length 80 m. The T. owes its importance to the valuable mineral district through which it flows.—See Guthrie's *River Tyne: Its History and Resources* (1880).

TYNEMOUTH, *tĭn'mŭth* or *tīn-:* small village and parish of Northumberland, England; on the n. bank of the river Tyne, and near its mouth—hence the name. It is 8 m. e. of Newcastle by railway, and its light-house is in lat. 55° 1′ n., long. 1° 25′ w. Though itself only a village, it gives name to a township, most of which, however, is comprised in the town of N. Shields (see SHIELDS, NORTH). It also gives name to a parliamentary and municipal borough, including, besides the village of T., the large town of N. Shields and the three villages Chirton, Preston, and Cullercoats. The village of T. is much frequented as a watering-place by the inhabitants of Newcastle. Its sands, about a mile in length, form an excellent bathing-ground. There are many attractive buildings and institutions, as the castle and fortifications, the fine ruins of a priory and Lady chapel, the Master Mariners' Asylum, etc.—Pop. of township 21,000; of borough (1881) 43,863; (1891) 46,267.

TYNG, *tĭng*, STEPHEN HIGGINSON, D.D.: Prot. Episc. clergyman: 1800, Mar. 1—1885, Sep. 4; b. Newburyport, Mass. He graduated at Harvard College 1817; spent two years in mercantile business; studied theol. in Bristol, R. I.; and was ordained in the Prot. Episc. Church 1821. In 1821–23 he was rector in Georgetown, D. C.; 1823–29 in Prince George co., Md.; 1829–33 of St. Paul's, and 1833–45 of the Church of the Epiphany, both in Philadelphia; and 1845–78 of St. George's in New York. He was retired from his last charge as rector emeritus, with a pension. He received his degree from Jefferson College, 1832 and Harvard 1851. T. was noted for his fervid and pungent pulpit eloquence, and as a vigorous leader of the 'low church' clergy in the denomination. At various times he was editor of the *Episcopal Recorder*, the *Theological Repository*, and the *Protestant Churchman;* and was a founder of the Evangelical Knowledge Soc., the American Church Missionary Soc., and the Evangelical Education Soc. He was popular and effective in addresses on temperance and patriotic subjects; and published, among many theological and biographical works, *Lectures on the Law and the Gospel* (Philadelphia 1832); *Forty Years' Experience in Sunday-schools* (New York 1860); *The Prayer-book Illustrated by Scripture* (8 vols. 1863–67); and *The Office and Duty of a Christian Pastor* (1874).—His son, STEPHEN HIGGINSON T., Jr., D.D. (b. Philadelphia, 1839), was rector of Holy Trinity Church (Prot. Episc.), New York, 1865–81; but resigned and became manager in Paris of the European interests of an American life insurance company.

TYPE, n. *tīp* [F. *type*, type—from L. *typus;* Gr. *tupos*, a figure. an image on a wall—from *tuptein*, to strike: It. *tipo*]: a mark of something; an emblem, sign, or symbol; a general form which gives character of similarity to others; a figure of something to come; the design on a medal; the shape or form of a letter of the alphabet in metal or wood, or the prism-shaped piece of metal or wood on the face of which such a letter has been formed (see below); a peculiarity in the form of a disease; the primitive idea or pattern of a work of art, having its existence in nature; the perfect representation or idea of anything: in *biol.* and *nat. hist.*, the characteristic representative of a class, genus, or species, in which its most ideal peculiarities are realized, or such a group, class, genus, or species; compare *Archetype*, the simple essential plan common to all divisions and members of a sub-kingdom or class: V. to typify.' TYPIC, a. *tĭp'ĭk*, or TYP'ICAL, a. *-ĭ-kăl*, emblematic; figurative; indicative rather than positive; in *bot.*, etc., applied to a specimen which has eminently the characteristics of the species, or to a species having the characteristics of an order; representing something future by a form, model, or resemblance. TYP'ICALLY, ad. *-lĭ*. TYP'ICALNESS, n. *-nĕs*, the state of being typical. TYP'IFY, v. *-fī* [L. *faciō*, I make]: to represent by an image or resemblance; to foreshadow; to prefigure. TYP'IFYING, imp. TYP'IFIED, pp. *-fīd*. TYP'IFICA'TION, n. *-kā'shŭn*, act of typifying. TYPE-FOUNDER, a manufacturer of types for printing. TYPE-FOUNDRY, a place where types are manufactured. TYPE-METAL, an alloy of lead, antimony, and tin, used in making types. TYPIC FEVER, a fever that is regular as in its attacks, or follows a regular type, as distinguished from *erratic* fevers, which are irregular in their attacks, or appear at undeterminate intervals.

TYPE, in Theology: image or representation of some object which is called the Antitype (q.v.) In theological use, T. denotes chiefly, though not exclusively, those prophetic prefigurings of the persons and things of the New Dispensation which are found in the ritual and the history of the Old Testament. See HERMENEUTICS: EXEGESIS: for the different senses of which the literal text of Scripture is considered susceptible. Of one of these, the 'mystical,' a further subdivision is the 'typical' sense. The word 'type' itself is used by the writers of the New Test. (Acts vii. 43; Rom. v. 14; Phil. iii. 17); also by the Jewish historians, e.g., Philo, *Opp.*, t. I., 108; and while Paul and other sacred writers speak of the ancient types of things to come, Peter completes the parallelism by describing baptism as the antitype of the ark of Noah, I Pet. iii. 21. Of the types of the Old Test., many are directly pointed out as such in their very institution; many also are distinctly applied in the New Test. There is a large class, however, which more properly fall under the mystical sense of Scripture, and which are called indirect, i.e., 'adaptive' or 'applied,' types: in application and interpretation of these, many of the Fathers, and especially Augustine and Gregory the Great, are amazingly elaborate and ingenious.

TYPE: a right-angled prism-shaped stamp or die of wood or metal having on one end (the face) a letter or character in high relief, used in Printing (q.v.). The name is used also for the aggregate of such lettered dies, as well as for the particular style or variety of letter impressed by them. The earliest types (in this last sense) were in the style known as Gothic or Black Letter (q.v.); this was superseded, except in Germany, by Roman and Italic. The top of a type is its 'face;' the lower end on which it stands is grooved, thus forming 'feet;' the 'shoulder' is the part on the top which projects beyond the letter; from the shoulder to the foot is the 'shank' or 'body;' and the front or 'belly' of the shank has a nick or nicks across it to serve as a guide to the type-setter in placing the type in his 'stick' (see TYPE-SETTING).

The sizes of type used at the present day are very numerous, ranging from *brilliant*—the minutest kind, used in printing vest-pocket Bibles—to those used in placards and posters. In book-work about 16 sizes are in use. *Brilliant*, the smallest regular size, has about 239 lines to the lineal foot; *gem*, next in order, 222; *diamond*, 207; *pearl*, 178; *agate* (or *ruby*), 166; *nonpareil*, 138; *minion*, 122; *brevier* (in which this is printed), 111; *bourgeois*, 102½; *long primer*, 89; *small pica*, 83; *pica*, 71½; *English*, 64; *great primer*, 51½; *double pica*, 41½; and so on. All sizes larger than *canon* (about 17⅞ lines to the foot) are named by the regular multiples of pica, English, etc., according to the class respectively—e.g., *two-line pica, two-line English, four, six, eight*, or *ten-line pica*, etc. Some of these names were given from the first maker; others from the books first printed with the particular letter. Thus, *Cicero* is the name of a type in France and Germany, with which Cicero's letters were first printed (Rome 1467); *pica* is from the service of the mass, termed *Pica* or *Pic; primer*, from *Primarius*, the book of Prayers to the Virgin; *brevier*, from *Breviary; canon*, from the *canons* of the church; etc.

In the United States the common unit of size is the 'point' (about $\frac{1}{72}$ of an inch), adopted 1883 by the United States Type-founders' Assoc. The point system, however, originated in France 1737, and is now in general use there and in Germany. The point in use in the United States is slightly smaller than the French point, 12 of the latter being nearly equal to 13 points of the former. In this system brevier is called 8-point, minion 7-point, nonpareil 6-point, pica 12-point, etc.

All kinds of types are sold by weight by the founders, the price varying in amount according to the size of the letter—the smallest size being the most expensive. In the *diamond* size (4½ points) 2,800 go to a single lb. of the letter *i*, and of the thinnest *space* about 5,000.

A complete assortment of types is called a *Font*, which may be regulated to any extent. A font of 1,000 lbs. would contain about 514 lbs. of Roman lower-case (i.e., small letters), 86 lbs. of capitals, 20 lbs. of small capitals, 40 lbs. of figures, 28 lbs. of points, 85 lbs. of spaces, 122 lbs. of Quadrats (q.v.), 5 lbs. of fractions, 73 lbs. of italic lower-case, 23 lbs. of italic capitals, and 4 lbs. of sundries. Every type-founder has a scale showing the proportional quantity of each letter required for a font; and a peculiar scale is required for every language. For the Eng. language, the following is a type-founder's scale for the small letters of a font of types of a particular size and weight:

a	8,500	h	6,400	o	8,000	v	1,200
b	1,600	i	8,000	p	1,700	w	2,000
c	3,000	j	400	q	500	x	400
d	4,400	k	800	r	6,200	y	2,000
e	12,000	l	4,000	s	8,000	z	200
f	2,500	m	3,000	t	9,000		
g	1,700	n	8,000	u	3,400		

It appears from this scale that the letter *e* is used much more frequently than any other character. The standard height of type in Great Britain is ·9166 inch; in the United States it varies from that to ·9186 inch. See **Type-founding: Type-metal: Type-setting.**

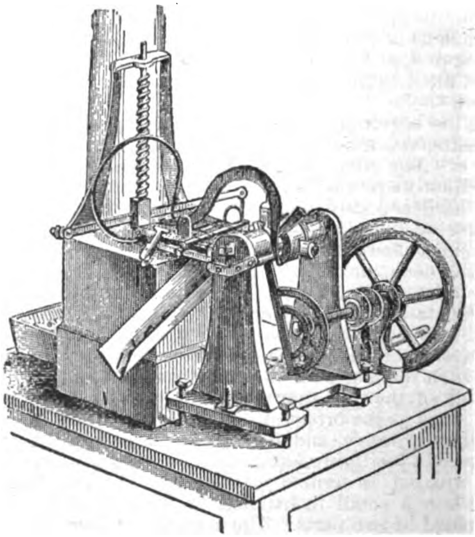
TYPE-FOUNDING: the casting of metal type for use in printing. In the early days of printing, the type used by printers were cast by themselves; but as the art developed, type-founding as a distinct business became necessary.

Type-founding originated in Germany with printing; as early as 1452, P. Schöffer (see GUTENBERG) had substituted types of cast-metal for the original wooden types. The earliest and best punch-cutters were in Nürnberg, which for a time supplied the type-founders throughout Germany with punches. Bodoni (1740–1813) in Italy, the Didots (q.v.) in France, and Breitkopf (1719–94) in Leipzig, are the most distinguished names in the subsequent history of type-making on the continent. The art made little progress in Great Britain from the time of Caxton, and the types used were mostly imported from Holland, until about 1720, when William Caslon, originally an engraver of ornamental devices, turned his attention to letter-cutting, and soon established such a reputation as not only put a stop to importation of foreign types, but caused his own to be frequently sent to continental countries: the foundry established by him in London is still in existence. Baskerville (q.v.) is the next greatest name in the history of the art in England. The types produced by Alexander Wilson, of Glasgow, became the foundation of the fame of the Foulis (q.v.) as printers. The type-foundry of Miller & Richard in Edinburgh has had well-merited reputation for more than half a century, which it still maintains. In the United States many improvements have been introduced.

At the beginning of the 16th c. the apparatus for type-founding was much the same as till near the middle of the 19th c. The first step in the process is the cutting of a punch or die resembling the required letter. The punch is of hardened steel, with the figure of the letter cut, the reverse way, on its point. This die is struck into a piece of copper about an inch and a quarter long, one-eighth of an inch deep, and of width proportionate to the size of the type to be cast. This copper, being so impressed with the representation of the letter, requires to be adjusted to the mold in which the type are to be cast, so that the 'face' or impression of the punch (in the copper) may be brought into such relation with the metal which forms the 'body' or stalk of the type that when the types are 'set up' they may stand at the proper distance from each other, and be in 'line' or range, and also square to the page: this work is termed 'justifying,' and the copper when so justified and squared is termed a 'matrix.' The matrix is then fixed into a small instrument or frame, called the mold, composed of two parts. The external surface is of wood, the internal of steel. At the top is a shelving orifice, into which the metal is poured. The space within is of the size of the required body of the letter, and is made true. The melted metal, being poured into this space, sinks down to the bottom into the matrix, and, instantly cooling, the mold is opened, and the type drops out. This process of casting types is executed with great celerity. Every separate letter in the alphabet, every figure, point, or mark, must have its own punch and matrix. In casting types, the founder stands at a table, and has beside him a small furnace and pot with heated metal (see TYPE-METAL), which he lifts with a small ladle.

Various attempts were made during the early part of the 19th c. to cast type by machinery. The first successful apparatus was the invention of Elihu White, of New York. This has been modified and repeatedly improved by David Bruce, a Scotsman resident in the United States. The type-casting machine was introduced into Great Britain, and patented by Miller & Richard, of Edinburgh, 1848. This machine requires a man to drive it, but produces more than double the quantity produced by hand in any given time, while the finish and regularity of the type are much more perfect. Another machine was constructed and patented some years after by the same firm, with the view to apply steam for driving, which was successfully completed 1860, and is now the approved system of casting.

The type-casting machine consists, first, of a small melting-pot, which contains the molten metal and is placed over a small furnace having an outer case of cast-iron.



Type-casting Machine.

In the interior of the pot is arranged a forcing-pump and valve for admitting the metal under the piston, by the action of which the molten metal is forced through a narrow channel leading from the bottom of the chamber in which the piston works to the outside of the pot, where there is a nipple, with a small hole through it. Against this nipple the mold in which the type is formed is pressed at the moment at which the piston descends, and so receives the molten metal that forms the type.

The second part of the machine is that which carries the mold, and to which it is firmly bolted. The mold is similar to the old hand-mold, but modified to suit the machine; it is much stronger; the 'jets' are shorter, and the orifice by which the metal enters is smaller, so that it may be made to coincide exactly with the small hole in the nipple in front of the pot. The mold—as the old hand-mold—is made in halves; one being firmly bolted to an arm which, by cams and levers, is made to oscillate, and carry the mold to and from the nipple in front of and above the pot: the other is bolted to another arm, which, by a peculiarly formed hinge, is attached to the first arm, so that the two halves of the mold may be made to open and shut on each other, like the lid of a snuff-box; and so both sides of the mold oscillate together to and from the nipple in the pot from which they receive the molten metal. The operation of the machine is as follows: the piston being raised in the chamber of the pump, and the chamber being supplied with metal through the valve, the mold is brought against the nipple; the valve closes, to prevent the metal being forced back into the pot; the piston descends, and forces the metal through the narrow channel into the mold; the mold then recedes from the nipple, and in receding the two halves separate from each other, and eject the type; the mold again approaches the nipple, and in approaching the two halves close together, and are ready for another operation. A blast of cold air is directed upon each mold, to keep it cool.

When the type drops from the mold, it is in a rough state; and as soon as a heap has accumulated on the caster's table, the types are removed by a boy, who breaks off a superfluous tag of metal, or 'jet,' hanging at the end of each. From the breaking-off boy the types are removed to another place, where a boy rubs or smooths their sides on a stone. When well smoothed, they are removed to a table, and set up in long lines upon a 'stick' (see TYPE-SETTING): they are then dressed or finished, and after being examined by a magnifying-glass are ready for use. Whatever be the size of the types, they all are made of uniform height (see TYPE), and must be perfectly true in their angles, otherwise it would be impossible to lock them together: a single irregular type would derange a whole page. All the types of one class of any founder are always uniform in size and height; and to preserve their individuality, all the letters, points, etc., belonging to one class are distinguished by one or more notches or nicks on the body of the type, which range evenly when the types are set. These nicks are useful also in guiding the hand of the compositor. Types are all equally grooved in the bottom, to make them stand steadily.

TYPE-METAL: alloy of lead, regulus of Antimony (q.v.), and tin, used for making the types (see TYPE) used in printing and for stereotypes (see STEREOTYPING: TYPE-FOUNDING). Originally the proportion of tin was small, but 1856 a new compound was formed by adding a large proportion of tin. This increased the cost considerably, but doubled the durability of the type. The antimony gives hardness and sharpness of edge to the composition, while the tin gives toughness and tenacity, and removes the brittleness which antimony causes when used without tin. The proportion generally used in making type-metal for small type consists of about 100 lbs. of lead, 40 lbs. of antimony, and 20 lbs. of tin. For larger sizes the proportions of antimony and tin are reduced. Copper and iron are sometimes added in very small quantities to impart resistance.

TYPES, CHEMICAL: compounds of two or at most of three elements, supposed to persist throughout long series of complex compounds. The type-theory was fully developed by the German chemist Gerhardt, whose predecessors in the same line of theorizing and systematizing were Dumas, T. Sterry Hunt, and Laurent: it is now largely superseded by the use of formulæ representing more accurately the internal constitution of chemical compounds. On the theory of types, water, H_2O, represented thus, $\left.\begin{matrix}H\\H\end{matrix}\right\}O$, would be the type of all alcohols, one atom of the H giving place to an alcohol radical, e.g., to C_2H_5, to produce ethyl alcohol, C_2H_6O, or $\left.\begin{matrix}C_2H_5\\H\end{matrix}\right\}O$. The *ammonia type*, NH_3, represented thus, $\left.\begin{matrix}H\\H\\H\end{matrix}\right\}N$, includes the nitrides and phosphides, the ammonia compounds, and the amides: thus, ethylamine, C_2H_7N, = the above ammonia type, with one of its hydrogen atoms replaced by C_2H_5. The *hydrochloric acid type*, $\frac{H}{Cl}$, includes the chlorides, fluorides, iodides, bromides, cyanides, etc.: thus benzoyl chloride, C_7H_5OCl, $= \frac{C_7H_5O}{Cl}$.

TYPE-SETTING: the art or act of combining type in proper order for printing; called also 'composing'—hence a 'type-setter' is called a 'compositor,' and the setting of the type 'composition.' In type-setting a 'composition' is performed by picking up the types one by one, each out of its own box in the Cases (q.v.), which rest on a 'composing-frame,' and placing them side by side, face up, and the nicks in front, in a small hand-tray, called a 'composing-stick' (of wood, brass, or iron), with a movable slide, which, by means of a screw, may be regulated to any width of line. In either case, the composing-stick is made perfectly true and square. When the compositor arrives at the end of his line, he has a task in which great carefulness is required. The first letter and the last must be at the extremities of the line: there must be no large spaces left in some instances, and crowding in others. Each type is of a constant thickness, as far as regards that particular size of letter; though all the letters are not of the same thickness. The adjustments, therefore, to complete the line with a word, or with a syllable, must be made by varying the extent of the spaces between the words. A good compositor's work is distinguished by uniformity of spacing; he will not allow the words to be very close together in some instances, with large gaps between them in others. In setting up poetry, or similar matter, where there is a blank space at one end of the line, spacing is easily accomplished by filling up the blank with larger spaces, or *quadrats*. But whether prose or poetry, the matter of each line must be equally adjusted and *justified*, so as to correspond in compactness with the previously set lines. The process of composing is greatly facilitated by the compositor using a thin slip of brass, called a *setting-rule*, which he places in the composing-stick when he begins, and which, on a line being completed, he pulls out, and places on the front of the line so completed, in order that the types he sets may not come in contact with the types behind them, but glide smoothly into their places.

Fig. 1.

When the compositor has set up as many lines as the composing-stick will conveniently hold, he lifts them out by grasping them with the fingers of each hand, thus taking them up as if they were a solid piece of metal. He then places the mass in an elongated board, termed a *galley*, which has a ledge on one or perhaps both sides. The facility with which some compositors can lift what is called a *handful* of movable type without deranging a single letter is remarkable. This sort of skill can be attained only by practice. When the compositor has set up as many lines as fill a page, he binds them tightly round with cord, and removes them from the galley.

Sometimes, as in the case of newspaper and similar work, the *handfuls* of type are accumulated till they fill the galley, and in that form are prepared for press. After the matter is thus far prepared, it is the duty of the pressman to take an impression or *first proof* from the types, in order that the first-proof *reader* may compare with 'copy,' or MS.; after which it is handed to the compositor, so that he may correct the errors which are sure to have been made. Proofs are taken usually by a press kept for the purpose. After the galley matter is corrected and recorrected by the compositor, it is divided into pages of the size wanted; and head-lines or figures indicating the number of the page being added, the pages are arranged upon a large firm table, and there securely fixed up or 'locked' in an iron frame or *chase*, by means of slips of wood and wedges, or *quoins*. The annexed cut is a representation of a small *form*, consisting of four pages of type.

This process, called *imposing*, being completed, and the face of the types levelled by a *planer* and mallet, the *form*, as it is called, is proved, and prepared for press. From this is cast the stereotype, when that is to be used to print from: see Stereotyping. The imposing-table is usually of smooth stone, or marble, or cast-iron, on the top, and requires to be a substantial fabric.—See Type: Type-founding: Lineotype: Type-setting and Type-distributing Machine.

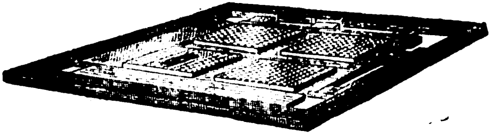


Fig. 2.

TYPE-SETTING AND TYPE-DISTRIBUTING MACHINE: mechanical invention to supersede the setting and the distributing of printing-types by hand. The first type-composing machine on the records of the Eng. patent office was that of W. Church, 1822, Mar. This, after 20 years, was followed by a number of others; but none were satisfactory. It is in the spacing out of the words so as to neatly fill up a line, which is called 'justifying,' that the early machines failed, because another operator afterward had to space the machine-setting into lines of equal length. It is comparatively easy to construct a machine which will, by some mechanical arrangement, set up type, in any required order, but with *exactly equal spaces* between the words; and the difficulty of justifying has only recently been surmounted.

In the early composing-machine by Church, 'the types are arranged in files in a case at the top, each file being directly over a slit in a horizontal frame. One of a number of jacks protrudes through each of these slits, each jack being connected with a key in a manner somewhat similar to the jacks and keys of a harpsichord.' This description conveys the leading idea in most of the type-composing machines invented since 1822.—Hattersley's machine, patented 1857, has somewhat analogous movements, but different mechanism and details. A machine on Hattersley's principle, with details much improved by Alex.

Fraser, of Edinburgh, was in use by a large printing-firm there: with it an operator can compose from 'copy' at the rate of from 10,000 to 12,000 types per hour; but this rate could not be maintained continuously, the strain of such rapid setting being too great for the operator.

A type-distributing machine being quite as important as a composer, one was invented by Fraser—recently improved, according to patent 1884, July 24. In general appearance it resembles his composer, but with face-plate inverted. Three of these distributing-machines are required to keep pace with two of his composing-machines.

A type-composing machine invented by a German named Kastenbein was in operation many years in the London *Times* office: it is on the same principle as the foregoing, but its details have been improved from time to time. A composing-machine on a different principle, invented by Mackie, somewhat resembled the Jacquard loom.

Among early machines were two of William Mitchel, Irish inventor—one for setting, another for distributing the type. The types were distributed by notches on their sides, a characteristic notch or notches being used for each letter. This machine was experimented with in New York, and much work was done with it; but, like many other type-setting machines, it was found not economical.—The next development took the form of matrix-producing machines: in these, type-faces were struck against a soft *papier-maché* or equivalent surface so as to give a matrix, the reverse of type, upon which a stereotype plate could be cast.

The approved recent machines may more properly be termed stereotyping-machines, of the Mergenthaler and of the Rogers class. In both of these machines, movable matrices are employed, which are moved into line by the operator, who works the keys of a key-board. Between each word the small end of a wedge-shaped 'space' is inserted. When the end of the line—as near as may be judged, and as determined by the division of syllables and other considerations—is reached, a single movement by the operator presses up all the wedge-shaped spaces until the matrices just fill the line. Melted metal is then run upon the matrices, and a solid block containing one line of type is produced. As regards speed, an ordinary compositor can set by hand 1,000 to 1,200 ems per hour. One-third additional of his time is required for distribution. For the new machines 5,000 to 6,000 ems per hour are claimed: moreover, no time is expended in distribution, as the machines effect this operation in their regular operation: see LINOTYPE. There are in use at the present time (1897), in printing and newspaper offices, a number of type-setting machines of different patterns, such as the Thorne, Empire, and Macmillan. These machines only set type and do not justify it or cast it when set.

TYPE-WRITER: machine for superseding handwriting by a mechanical process. The first successful T.-W. was an American invention, and was so far perfected soon after 1874 that many thousands were then being made to supply the demand.

The archives of the Brit. patent office show that in 1714 a patent for a writing-machine—the first T.-W. known—was applied for by Henry Mill, London engineer. No drawing of his machine is extant, and its construction is not known. In 1784 a French invention appeared, designed to make embossed or raised characters for the blind.—In 1843 Charles Thurber, then of Worcester, Mass., secured a patent for a T.-W., and two years later a second patent: his machines were never perfected for practical use. In 1855 Foucault invented a writing-machine for the blind: he was followed by English inventors; but none of the machines came into practical use. In 1856 Alfred E. Beach, of New York, one of the proprietors of the *Scientific American*, secured a patent for a T.-W. which embodied the characteristic basket-like disposition of type-bars and type used on the Remington and other standard machines of to-day. The Beach machine was for printing embossed letters for the blind. Contemporaneous with this inventor, Dr. S. W. Francis, of New York, was working on the same line. He arranged his keys in a circle around the instrument, used an inking-ribbon, a travelling paper-frame, and an alarm-bell, rung as the end of the line was approached, thus embodying many features of the instruments of to-day. Thomas Hall, of New York (inventor of the Florence sewing-machine), also was experimenting on a T.-W. about this time. In 1859 he learned of the prior patents and tried to purchase them. 1867, June, he obtained a patent of his own; and one of his machines, printing large and small letters, was shown at the Paris Exposition 1867. The paper was placed on a table, which slid under the bottom of the machine. The spacing for letters varied with their thickness, thus producing work more resembling that of type than does the identically spaced type-writing of recent machines. Hall struggled against much discouragement, and never succeeded in bringing his machine into use. John Pratt, of Center, Ala., secured a U. S. patent 1868 for what he called his pterotype—a complicated machine which did not come into public use.

This brings us to the recent history of the T.-W. Charles Latham Sholes; of Milwaukee, Wis., with Samuel W. Soule and Carlos Glidden, became associated: the first two were trying to construct a numbering-machine: Glidden suggested developing the idea into a T.-W. After months of work, Sholes left the others, and with James Densmore, of Meadville, Penn., as financial backer, pushed the invention to completion, and secured a patent 1868, June. In 1873 it was put on the market as the Sholes and Glidden T.-W. E. Remington and Sons, of Ilion, N. Y., were to make the machines; and in 1874, the year when the first one was really on sale, 400 were sold. These early machines printed only one kind of letter. The introduction of small letters occurred 1877, and many minor improvements have since been introduced. The Remington T.-W., as it is now called, is characterized by the 'shift,' by which the same keys print large or small letters as desired. The radial type-bars, forming when at rest a sort of basket, also are characteristic. The Remington type-writer somewhat resembles a sewing-machine in appearance. On the top is a roller covered with India-rubber; and by its side, and parallel, a small wooden roller. Between these the top edge of a sheet of paper is inserted, and brought into proper position to receive the first line of 'writing.' Immediately under the rubber cylinder, and in line with its axis, is the ink-ribbon; and beneath this there is a circular opening, several inches in diameter, in the case containing the mechanism. At a point in the centre of this opening, every letter is made to appear in succession to do the writing. The types are of iron, and are fixed in the ends of a series of levers about 3 inches in length, each lever having its fulcrum at a point in the circumference of the opening. These type-levers are in fact suspended around a kind of well, their short arms being connected with a series of wires actuated by keys which are worked by both hands similar to the way in which a piano is played. The key for forming the spaces between the words extends the whole length of the key-board, so that it can be readily worked, no matter in what position the hands may be at the close of every word. The depression of each key causes the letter with which it is connected to rise quickly in the well; and, when raised, it strikes the ink-ribbon, thereby transferring the form of the letter to the paper. On removal of the pressure, the type descends by its own gravity. When a single letter is printed, the paper and its cylinder are, by means of a coiled spring, traversed at each touch of the key, from right to left of the machine, the precise distance required to admit of the next letter being impressed. At each touch of the key, too, the ink-ribbon is advanced a corresponding distance. After a line is completed, the paper-cylinder is moved back by a peculiar arrangement to the right of the machine, and the pressure of a lever causes it to make a partial revolution, which forms the space between the two lines of the 'writing.'

The Caligraph, invented and developed by George W. N. Yost, uses no shift, but has a separate key for each character: in other respects it resembles the Remington.

The Hall T.-W., patented 1881, Mar. 3, was an innovation. It is very small, and in it a sheet of rubber type-faces is used, and the letters are brought to the right position by a sort of pantograph motion. A die or punch is then brought down upon the back of the sheet over the letter, by the operator, thus impressing the letter on the paper. His machine introduced the era of small and lower-priced machines.

In 1880, Feb., a patent for a T.-W. was granted James B Hammond, of New York. The type-faces were carried on the periphery of sectors of circles. These were slipped on a vertical pin and rotated around it. Three such sectors gave three sets of types, thrown into action by two 'shifts.' Instead of striking the type against the ribbon and paper, a hammer gave the paper a blow from the back against the ribbon and type-face. The force of the blow came from a spring, so that an even force was always secured. This feature is one of the most important characteristics of the Hammond machine. The Remington class projects the type against an inking-ribbon, back of which is the paper—the latter receiving the blow, and being backed by a roller. Another class of machine has no ribbon, but uses an inking-pad. The type-face strikes this first, and then strikes the paper directly.

The different classes of machine are now very numerous. The Remington still holds a leading position and is a standard machine.—In 1885 a large company was formed in London to manufacture an unusually simple and cheap T.-W., weighing only 2¼ lbs., sufficiently portable to be worked in a railroad car. The roller carrying the paper to be written on is placed on a small carriage which moves forward and backward on rails. At right angles to this roller, and slightly raised above it, is the type-bar—the writing, or printing, being executed by moving an indicator, held between the finger and thumb, to any letter on the index, and pressing it down lightly.

As regards speed, a rate of 50 words a minute is good ordinary work; 70 or 80 words is very fast; 90 or 100, exceedingly fast.

TYPHA, *tī'fa:* genus of plants, of nat. order *Typhaceæ* of some botanists, which, according to others, is a suborder of *Araceæ.* The *Typhaceæ* all inhabit marshes or ditches. They have nodeless stems, unisexual flowers arranged on a spadix without a spathe, the spadix of the male flowers being at the summit of the stem, above that of the female flowers, the perianth consisting of scales or lax hairs, the anthers on long filaments, the fruit dry, consisting of the seed with adherent pericarp. They are found in very different climates and scattered over the world. Two species of T. are found in Europe, *T. latifolia* and *T. angustifolia*, popularly known as CAT'S-TAIL or REED-MACE. *T. latifolia* is the most common, and naturalized abundantly in the United States, where *T. angustifolia* is less common; it may be distinguished by the channelled shape of the leaf-bases, and an interval between the staminate part and the lower downy pistillate portion of the club. It is sometimes called Bulrush. It grows to the height of five or six ft. The root-stocks are astringent and diuretic, and abound in starch. The young shoots of this and *T. angustifolia*, a smaller plant, are much eaten by the Cossacks of the Don; hence known elsewhere under the name *Cossack Asparagus.* The pollen of T. is inflammable, like that of *Lycopodium*, and is used as a substitute for it. *T. angustifolia* and *T. elephantina* are used in India for making mats and baskets.

TYPH-FEVER, *tīf'fē-vėr:* continued low fever. The best-marked varieties of this affection are known as typhus and typhoid fevers, which in typical cases are easily distinguished from one another, but frequently so merge into one another that it is difficult to decide whether the disease should be classed as typhus or typhoid; hence the general term T.-F. is convenient in doubtful cases. All the typh-fevers belong nosologically to the miasmatous order of zymotic diseases.

TYPHLITIS, n. *tĭf-lī'tĭs* [Gr. *tuphlŏs*, blind]: inflammation of the cæcum.

TYPHOID, a. *tī'foyd:* see under Typhus.

TYPHON, n. *tī'fŏn* [Gr. *Tuphōn;* L. *Typhon*]: the evil deity of Egyptian mythology; in *L.* and *Gr. myth.*, the giant Typhōeus, son of Seb (Kronos) and Nut (Rhea). The latter gave birth to five children on the last five days of the year—first, Osiris and Haroeris, then T., and lastly Isis and Nephthys. The Egyptian name of T. was Set, also Suti and Sutech, and in the earliest times he was a highly venerated god. He often appears on the monuments in the form of a beast, the crocodile, the hippopotamus, or the ass, and with yellow hair and long blunted ears. From him the kings of the 19th dynasty, Seti (Sethos, Sethosis, changed by Herodotus into Sesostris), derive their name. The city of Ombos was a special seat of his worship. In later times, either about the close of the 21st dynasty or afterward, his worship was abandoned, and his figure and name were obliterated from many of the monuments. The cause of this curious religious revolution is unknown; but, at any rate, T. came to be regarded as a god hostile to the Egyptians, and was gradually developed into a personification of the principle of Evil—in short, the Egyptian Satan, the opponent of holy doctrine, and adversary of Osiris—the god of the waste howling wilderness, of the salt lakes, of drought, and of scorching heat.

The connection between the Egyptian *Set* and the Greek T. seems beyond doubt, but is not easily traceable. According to Homer, T. (called also Typhāon) was a huge giant, chained under the earth in the country of the Arimoi, and lashed by the lightnings of Zeus. Hesiod makes him son of Typhōeus and a hurricane; and, by the snake-goddess Echidna, father of the Chimæra, the many-headed dog Orthus, the hundred-headed dragon that guarded the apples of the Hesperides, the Colchian Dragon, the Sphinx, Cerberus, Scylla, Gorgon, the Lernæan Hydra, the Eagle that consumed the liver of Prometheus, and the Nemean Lion. Typhōeus, again, was the youngest son of Tartarus (Hell) and Gæa (Earth), or, as others say, of Hera (Juno) alone. At a later period, the father and son coalesced into one person. Pindar describes T. as a monster with a hundred dragon-heads, fiery eyes, black tongue, and terrible voice. He sought to wrest the sovereignty of the world from Zeus, but after a fearful struggle he was subdued by a thunderbolt from Olympus, and hurled into Tartarus, or buried under Ætna. The later poets modify the older myth with fabulous additions of their own. They connect T. with Egypt—an evidence that he had come to be identified with the Egyptian *Set*. According to Ovid and others, all the gods fled before him into Egypt, and, through fear, changed themselves into animals, excepting Zeus and Athene. After an appalling struggle, in which Zeus was once hamstrung and carried off by the daring monster, T. was vanquished, but not before he had hurled all Mount Hæmus against his adversary, in a paroxysm of supernatural rage. It is very possible that the fierce *physical* opposition of T. (especially when the monster came to be identified with *Set*, the Egyptian Satan) may have had (with other causes) a material influence in determining that popular conception of Satan which reigned both in patristic and mediæval times, and of which Milton availed himself in *Paradise Lost*.

TYPHOON, n. *tī-fôn'* [Chin. *ta*, great; *fŭng*, wind: the word has been confused with, and influenced in its spelling by, the L. *typhon;* Gr. *tuphōn*, a whirlwind (see TYPHON)]: name given by navigators to one of those tremendous rotatory storms of wind or hurricanes that visit the coast of Tonquin and China as far n. as Ningpo and the s.e. coasts of Japan. Varenius, in his *Geographia Naturalis*, describes them as 'storms which rage with such intensity and fury that those who have never seen them can form no conception of them; you would say that heaven and earth wished to return to their original chaos.' Typhoons are the cyclones of the e. Asiatic coast. They occur from May to Nov., but are most frequent during July, Aug., and Sep. They resemble the great storms of w. Europe (see STORMS) in their general characteristics, but with the main features more strongly marked. There is a depression of the barometer, over a space more or less circular, accompanying the T., but it is generally more contracted in area, and deeper and more abrupt than in European storms. It is not uncommon for the barometer, at the centre of the depression, to read 28·3 inches, and on rarer occasions to fall even as low as 27 inches; and the changes of pressure are very rapid, frequently ·2 or ·3 inch in an hour. It is this enormous difference of atmospheric pressure between neighboring places, and the consequent rapidity of the fluctuation, which gives the T. its terribly destructive energy—the law regulating the strength of the wind being, that it is proportioned to the difference of pressure between the place from which it comes and the place toward which it blows. The low pressure in the centre is confined to a very limited space; and since all round this space the pressure is greater, it follows that the level of the sea there will be higher. Hence a high wave frequently accompanies a T., advancing inland, carrying with it ruin and dismay, and sometimes bearing ships far over the level fields, where they are left stranded.

Typhoons have their origin in the ocean e. of China, especially about Formosa, Luzon, and the islands immediately south. They thence proceed, in four cases out of five, from e.n.e. toward w.s.w., rarely from e.s.e. to w.n.w., and scarcely ever from n. to s. or from s. to n.; in other words, their course is generally along the coast of China. The whole body of the T. advances at the rate of 12 m. or more an hour; within the body thus travelling the winds blow often 80 to 100 m. an hour, whirling round the centre of atmospheric depression in a direction contrary to the motion of the hands of a watch, as do all storms in the n. hemisphere. They thus rotate in the direction s., e., n., w.; and travel along the coast, so that the coast feels the n. side of the T., while at a distance from the coast the s. side alone is experienced. The rotation, however (according to the latest authorities), is in circles not returning on themselves, nor opening outward by their centrifugal motion, but tending to blow somewhat inward upon the centre of lowest pressure: see CYCLONE: STORMS: METEOROLOGY: ETC. The s.w. Monsoons (q.v.) prevail in summer over s. Asia, to the eastward of which are the n.e. trade-winds: see WINDS. Here, then, are two great aerial currents flowing contiguously, *but in opposite directions*, each highly charged with moisture, especially the s.w. current, which they have taken up from the oceans that they have traversed; and one of the many theories has been, that typhoons take their origin from these opposing currents, like whirlpools at the meeting of two sea-currents. Their intensity is aggravated by the large quantity of heat disengaged in the condensation of the vapor of the atmosphere into the deluges of rain which fall during the storm—10 and 12 inches of rain frequently falling in one day.—See STORMS.

TYPHUS, n. *ti'fŭs* [Gr. *tuphos*, smoke or stupor—from *tuphein*, to smoke]: in *med.*, a very fatal form of fever, contagious and generally epidemic, characterized by much depression, the appearance of an eruption on the skin, and a tendency to putrefaction. **TY'PHOUS**, a. *-fŭs*, pert. to or of the nature of typhus. **TY'PHOID**, a. *-foyd* [Gr. *eidos*, resemblance]: pert. to a low form of fever, characterized by general depression and an eruption of the skin, with morbid changes in the intestinal canal. **TY'PHOMA'NIA**, n. *-fō-mā'nĭ-ă* [*typhus*, and Gr. *mania*, madness]: the low muttering delirium which accompanies typhoid fever.—*Typhus* and *Typhoid* fevers have much in common; and formerly it was the general belief that no definite distinctions could be drawn between the various forms of continued low fever occurring in temperate climates. In 1840 an Eng. physician pointed out the differences now almost universally recognized between typhus and typhoid fevers; but his views received little attention till 1848–50, when Dr. Jenner (afterward Sir William Jenner), physician to her majesty, published two papers on *The Identity or Non-identity of Typhus and Typhoid Fevers*, and on *Diseases commonly confounded under the term Continued Fevers*. In these memoirs it was clearly shown that typhus and typhoid fevers differ, as Dr. Watson observes, 'notably and constantly in their symptoms and course, in their duration, in their comparative fatality, in the superficial markings which respectively belong to them, and which warrant our classing them amongst the exanthemata, in the internal organic changes with which they are severally attended, and (what is the most important and the most conclusive) in their exciting causes.'—In addition to typhus and typhoid, there is a third well-marked variety of continued fever, known as *Relapsing Fever* (q.v.).

Typhus Fever sometimes begins with premonitory symptoms, due to the depressing action of the poison—which, as will presently be seen, is the cause of the disease—on the nervous system before it affects the circulation. The patient, in these cases, is listless, unwilling to make any bodily or mental exertion, loses appetite, feels wandering pains over the body, is drowsy during the day, and restless at night. Usually, however, the disease begins suddenly, a shivering-fit being the first symptom. Severe headache, especially across the forehead, is another common early symptom. The muscular power rapidly becomes enfeebled, and the patient very soon feels compelled to take to his bed. As in typical cases of the disease there are three sets of symptoms, each set occupying about a week, it is convenient to consider the continued fever in three weekly stages. In the first week, in addition to the symptoms above noticed, the heat of the skin becomes increased, and the pulse, at first hard, becomes soft and weak and more frequent than in health, often rising to 120, and in severe cases reaching 130 or 140 beats in a minute. According to Dr. Jenner, the pulse in uncomplicated *typhus* gradually rises to a maximum, preserves that rate for a variable time, and then slowly falls; while in *typhoid* it rises and falls irregularly. There is considerable thirst; the tongue becomes clammy and dry, and its centre is covered with a white fur, which is often mesially divided by a straight brown streak, which is the first step to the blackness of that organ which afterward ensues. The intelligence is blunted; but on being sharply spoken to, the patient still gives rational answers. As the week advances, the strength is so reduced that he lies on his back and is unable to turn about in bed without assistance. In the second week the pulse becomes more frequent, weaker, and more compressible, and the tongue grows drier and browner. The teeth and lips are invested with dark sordes, consisting of morbid epithelium that had been shed; and the weakness is now so extreme that the patient sinks down in his bed. His voice becomes very feeble, and in bad cases he cannot swallow, nor can he put out his tongue. The two most remarkable symptoms of the second week are the delirium which seems to replace the headache about the ninth day, and the characteristic eruption. The delirium usually appears on the patient's awakening from sleep. He is inattentive to all that goes on around him, and usually lies still, muttering disjointed sentences, like a man talking in his dreams. Sometimes, however, he is more actively delirious, talking loudly, and trying to leave his bed. He may sometimes be roused by a strange voice, but soon relapses into his previous state. The senses are in a disturbed condition, the patient being commonly deaf, and, in advanced cases, often suffering from *Muscæ Volitantes* (q.v.), which gives rise to attempts to grasp these visionary objects, or to pick them from the bedclothes. This symptom, which is known in medical language under the name of *Floccitatio*, is almost certainly indicative of a fatal result. The characteristic eruption, which Dr. Jenner calls the *mulberry rash*, may show itself as early as the fifth day, but appears usually at the beginning of the second week, and sometimes a little later. The characters of the rash vary with its age. It consists of very slightly elevated spots of dusky pink. Each spot is flattened on its surface, irregular in outline, with no well-defined margin, but fades insensibly into the hue of the surrounding skin, disappears completely on pressure, and varies in size from a point to three or four lines in diameter. In two or three days these spots undergo a marked change. They no longer remain elevated above the surrounding cuticle; their hue becomes darker and more dingy than at first, and they now only fade on pressure, instead of completely disappearing. From this state they commonly grow paler, pass into faintly marked reddish-brown stains, and finally disappear. The spots composing this mulberry rash are generally very numerous, close together, and occasionally almost covering the skin. Sometimes, however, they are very few in number, at some distance from one another, and not to be distinguished at first from the *rose-spots* which, as noted below, occur in typhoid fever. The mulberry rash is usually on the trunk and extremities, but is occasionally limited to the trunk, and in rare cases is seen on the face. No fresh spots appear after the third day of the eruption, and the rash subsides between the 14th and 21st days. The mulberry rash, though characteristic of typhus when it occurs, is not an essential symptom of the disease. Dr. Jenner states that in patients less than 15 years old, in whom the mortality is not more than 5 per cent., it is mostly either absent, or pale in hue and scanty in quantity; while in persons more than 50 years of age, in whom the mortality is about 46 per cent., the rash is always present, and usually dark and abundant. Hence, as in small-pox, the degrees of development of the eruption may be taken as a direct measure of the intensity of the disease. In this second week death is most apt to occur. Among 25 fatal cases noted by Jenner, only nine deaths occurred after the 15th day, and not one after the 20th. If the case is going to terminate fatally, symptoms commonly and expressively termed *putrid* set in; a peculiar fetor is exhaled from the breath and the surface of the body; the tongue is dry, black, and fissured; the teeth are covered with dark sordes; and sloughing bed-sores occur. The prostration increases to the last degree, and *subsultus tendinum*, or involuntary twitchings of the muscles of the face and arms, make their appearance. In some cases the ordinary stupor is replaced a day or two before death by the condition known as *coma vigil*. In this condition the patient never sleeps, but lies on his back, with the eyelids widely separated, eyes staring and fixed in vacuity, mouth partially open, and face pale and devoid of expression. He is totally incapable of being roused to give a sign of consciousness, the pulse and breathing are hardly perceptible, and the skin is cool. The occurrence of death is marked only by the eye losing its slight lustre, and the chest ceasing its slow and feeble movements. During the third week the symptoms gradually abate in those cases which are going to end in recovery. The patient often falls into a profound, quiet, and prolonged sleep between the 14th and 17th day, from which he awakes with decided general improvement. The complexion is clearer, the delirium has disappeared, the pulse has fallen, and the tongue begins to show signs of moisture at the edges. In a few days the tongue gradually becomes clean, the appetite becomes ravenous, and from that time the patient rapidly gains strength. In many cases the amendment is so gradual that it is impossible to say when it begins; and occasionally the favorable crisis is preceded by a temporary aggravation of the symptoms. A profuse sweat sometimes accompanies the favorable change. In the cases that terminate fatally there is no rallying from the symptoms described as occurring in the second week.

Typhoid Fever presents symptoms so similar to typhus that it is sufficient to indicate the leading points in which it differs. Among the earlier symptoms (though they are sometimes postponed to the end of the first week), the most characteristic are abdominal pains and diarrhea. These are due to an ulcerated condition of the intestines

The diarrhea is either spontaneous, or continues after the operation of a purgative. The stools are loose and frequent; and either of dark color and fetid, or of yellow pea-soup-like appearance. The abdomen is found on examination unnaturally hard and resisting, tympanitic, and sometimes much distended; its shape is invariably the same, and somewhat peculiar. Its convexity is from side to side, and not from above downward. The patient is never pot-bellied, but tub-shaped; the cause probably being that the flatus occupies the colon, ascending, descending, and transverse. Pressure over the region of the cæcum frequently excites uneasiness, and usually gives rise to a peculiar gurgling movement, which is both audible and palpable, and doubtless arises from the intermixture of liquid and gaseous matters in the bowels. This gurgling is a still more common symptom at a more advanced stage of the disease, and is of the greater importance as it is rare in typhus or any other disorder. An eruption usually appears from the 8th to the 12th day of the disease. This typhoid rash is very different from that in typhus: it consists of slightly elevated papulæ or pimples, with their heads rounded, and their bases gradually passing into the level of the surrounding cuticle. These papulæ are circular and of bright rose-color, which fades insensibly into the hue of the surrounding skin. Throughout their whole course, they disappear completely on pressure, and reappear when the pressure is removed. Each papula lasts three or four days, and fresh ones appear every day or two after their first eruption. The number present at a time is usually 6 to 20, but the limits may range from 1 to more than 100. Their average size is a line in diameter, and they occur chiefly on the abdomen, chest, and back. As a general rule, no fresh spots occur after the 30th day. The diarrhea, to which reference has been made, continues with the progress of the disease, the patient often having three to six evacuations daily, and often unconsciously passing them in bed. This persistence of the diarrhea is one of the results of ulceration of the bowels. Another result of this ulceration is the hemorrhage from the bowels—one of the most alarming symptoms. It occurs most frequently during the third and fourth weeks, and varies from a mere stain to a large amount. Sometimes the blood thus poured out by ulceration of the mesenteric veins is retained in the bowel, and is discovered only after death; the clots being unable to pass through the valve of the cæcum. This hemorrhage is always an extremely bad symptom, and may either cause immediate death by fainting, or may so weaken the patient as to cause him to succumb to the disease.

The ranges of temperature in typhoid and typhus fever differ considerably from each other, and the range in a mild case of either differs considerably from the range in severe cases. In typhoid rapid changes of temperature occur on and after the 22d day, and in typhus about the 15th day. The average duration of *fatal* cases of typhoid was stated by Jenner at 22 days, and of typhus at 14 days; the former disease may terminate *favorably* during the fourth week, and the latter from the 13th to the 17th day.

In cases of recovery from typhoid, a remarkable fatuity remains for a considerable time; a childishness of mind often remaining more than a month after apparent restoration to health. 'The patient generally wakes up, as it were, from the fever, a complete imbecile. The whole man is changed. He seems to have renewed his youth Childhood and infancy return, and the greatest care is necessary to prevent untoward events. *No man can be considered as fit for work or for general military service for three or four months after an attack of severe typhoid fever.*'

Typhoid fever is essentially a disease of childhood and adolescence, the average age at which it occurs being 21½ years, and it being very rarely that a person aged more than 50 is attacked; while typhus attacks persons of all ages, from early infancy to extreme old age.

The appearances presented on the examination of the body after death are very different in these diseases. While in *typhus* the most common morbid appearances are a fluid condition of the blood; hyperæmia of the cerebral membranes, and increase of intercranial fluid; bronchial catarrh and pulmonary congestion, especially at the posterior part of the lungs, which are more or less collapsed; softening of the heart, liver, and spleen, and enlargement of the kidneys: in *typhoid* there is one constant and characteristic lesion—a morbid condition of the agminated glands (or glands of Peyer) and solitary glands of the small intestine, especially of the former. These morbid changes may be briefly summed up as follows: thickening, redness, tumefaction, and finally ulceration or sloughing of the glands, the ulceration always in the lower third of the small intestine. On the assumption that the natural office of Peyer's glands is, as Dr. Carpenter suggests, to separate noxious matters from the blood, and to discharge them into the intestinal canal, Dr. C. J. B. Williams suggests that the ulceration so constant in typhoid fever may result from the continued operation of the poison of that disease, thus escaping. When these changes proceed as far as ulceration, the case is one of extreme danger, though death does not necessarily ensue, because the scars left by healed ulcers are often seen when patients who have had typhoid fever have subsequently died from some other disease. The existence of these ulcers is, however, likely to prolong the illness after the fever itself has ended; to hinder recovery; and to endanger life, even in cases of apparent convalescence, by causing hemorrhage or perforation of the bowel. This perforation, which gives rise to intense peritonitis, occurs in about one in five fatal cases, and takes place usually through the ileum near the valve.

We proceed to notice the origin and mode of propagation of these two diseases, beginning with *typhus*. There is undoubted evidence that all the forms of continued fever are contagious, and it may now be regarded as established that one species of fever cannot generate another, but that each is produced solely by its like; that typhus, e.g., always propagates typhus, and never any other form of fever, as typhoid or relapsing fever. Some persons may, by some peculiarity of constitution, be able to resist the action of the poison, while others are peculiarly susceptible to it. An attack of fever generally exerts a certain amount of protective power against another attack of the same kind of fever; and *habit* has a good deal of power in fortifying the system against contagion, just as confirmed drunkards or opium-eaters can with impunity swallow doses of their respective poisons which would prove highly dangerous to a novice. 'Upon this principle has been explained the comparative immunity from contagious diseases, under like circumstances of exposure, of medical practitioners and nurses; of the keepers of filthy lodging-houses, while the new-coming inmates suffer; and even of prisoners, who, without having had the disease themselves, may nevertheless carry forth and communicate the infection. Whether typhus can be generated *de novo* by great overcrowding and vitiation of air, by the organic impurities emanating from the respiratory and other functions, is still a question. The conditions essential to its propagation are (1) overcrowding, combined with deficient ventilation; (2) personal filth, and clothes saturated with cutaneous exhalations; and (3) impaired condition of the system, such as may result from insufficient food, scurvy, and any other debilitating causes. The patient is most dangerous as a focus of infection after the end of the first week to the period of convalescence, the peculiar odor from the skin and lungs being then the strongest. If the poison be very concentrated, the disease may be caught by exposure to it for only a few minutes. The infected person may actually be conscious when the poison is taken in: one eminent physician states that this happened in his own case, from casually inhaling the breath of a person suffering with the disease. The most common latent period is nine days.

Investigations have shown that the living human body is the soil in which the specific poison of *typhoid* fever breeds and multiplies. The origin of the disease is unknown, but the poison is communicated or contained in the diarrheal discharges which issue from the diseased intestine. These discharges, as they dry up, preserve the germs of the disease; and if, through atmospheric or other agencies, these germs enter the living body, they communicate the disease, and the diarrhea soon begins. As the evacuations contain the specific virus of typhoid fever, the disease may be propagated among healthy persons (1) by percolation through the soil into wells which supply drinking-water; (2) or by issuing, through defects in the sewers, into the air which is breathed; or (3) by exhalation through the apertures of small ill-trapped water-closets or privies, which are at once the receptacles of the discharges from the sick and the daily resort of the healthy. The atmosphere thus infected with the poison is far more dangerous than that immediately surrounding a fever-patient.

It is the general belief of men eminent in medical science that if the means of checking the spread of typhoid fever are thoroughly and efficiently used, its recurrence might be entirely prevented. To judge of the extent of the infection to be destroyed, two points are to be considered—*first*, the amount and duration of the intestinal discharge in each case; *secondly*, the number of cases actually occurring. With regard to the first point, the diarrhea lasts, on an average, 15 days. With regard to the second point, there are many scores of thousands of typhoid-fever cases annually in the country, each discharging for a fortnight floods of liquid charged with the specific poison of a communicable disease. The following details of procedure should be invariably attended to as soon as this disease appears: 1. All discharges from the fever-patient should be received, on their issue from the body, into vessels containing a concentrated solution of chloride of zinc. 2. Two ounces of a caustic solution of chloride of zinc should be put in the night-stool on each occasion before it is used by the fever-patient. 3. All tainted bed or body linen should immediately on its removal be placed in water strongly impregnated with the same agent. 4. The water-closet should be flooded several times a day with a strong solution of chloride of zinc; and some chloride of lime also should be placed there, to serve as a source of chlorine in the gaseous form. 5. So long as fever lasts, the water-closet should be used exclusively as a receptacle for the discharges from the sick. (It has been attempted to prove that typhoid fever, like diphtheria, relapsing fever, and some other maladies, is caused by the entrance into the system of a specific bacterium; and that such specific organism has a part in propagating the disease is highly probable; but the pathogenic micro-organism of typhoid has not yet been proved: see GERM-THEORY.)

Although typhoid is contagious, it is much less so than typhus. Hence in typhus a large room should, if possible, be selected for the patient, and the air should be kept fresh by having a window or a door, or both, open. Curtains, carpets, and all superfluous furniture should be removed, and the body of the patient should be kept as clean as possible by ablution, and his sheets and night-shirt frequently changed; the latter being at once plunged into water containing chloride of zinc. All who approach the sick-bed should avoid as far as possible inhaling the patient's breath or the emanations from his skin. Friends occasionally visiting the patient should do so after a meal and a glass of wine or ale. Formerly it was the practice to distribute cases of typhus fever in the general wards of hospitals—the rule being to distribute them scantily among the general patients. This practice has been discarded; and now each hospital is provided with its fever-house to which cases of typhus are strictly limited.

From careful critical study of the history of fever generally, including chemical and microscopical examination of the excretions, a high medical authority arrives at the conclusion that the *general treatment of fever*, including typhus and typhoid fevers, may be summed up 'as being a combination of measures to *reduce excessive heat, to in-*

sure proper excretion, and *to act on the semi-paralysed nerves.'*

The special indications for treatment of *typhus* are: 1. To neutralize the poison, and to correct the morbid state of the blood. Hydrochloric acid is strongly recommended for this purpose; it may be given to the extent of a fluid ounce of the dilute acid daily, mixed with a quart of barley-water sweetened with syrup of ginger and flavored with lemon-peel. 2. To eliminate the poison and the products of the destructive metamorphosis of tissue. For this purpose, alkaline salts may be prescribed to act on the kidneys and skin, and purgatives are often useful. 3. To reduce the temperature. 4. To sustain the vital powers, and to obviate the tendency to death: nourishment in the form of milk and water, coffee, broth, beef-tea, etc., must be administered at least once in every three or four hours, after the fourth day of fever, and alcoholic stimulants are usually serviceable about the seventh or eighth day. Great discrimination is required in prescribing them, and we are indebted mainly to the Dublin school—to Graves and Stokes—for pointing out the importance of the cardiac and radial pulses as guides for the use of alcohol in fevers. When the cardiac impulse becomes weak, and when the first sound of the heart is impaired or absent, stimulants should be freely given; and an irregular, intermitting, abnormally slow, or imperceptible pulse affords a similar indication. 5. To relieve the distressing symptoms, such as the headache, sleeplessness, and delirium; and 6. To avert and subdue local complications.

In *typhoid fever*, the chief indications of treatment are: 1. To reduce the temperature, and subdue any excessive vascular excitement. 2. To restrain excessive diarrhea, for which purpose milk and lime-water in equal parts may be taken as a drink. The discharge ought not to be altogether checked; and some authorities even prefer giving saline laxatives to astringents, recommending that at the same time the lower bowel should be unloaded by warm-water injections, to which a little asafetida or aniseseed is added. In cases in which it is doubtful whether to check or encourage diarrhea, the physician will generally be on the safer side if he discourages the action of the bowels. 3. To stimulate the nervous system by proper food, and possibly by stimulants. 4. To maintain the free action of the kidneys, effected best by small doses of the alkaline carbonates, or of cream of tartar. 5. To influence the elimination of morbid matter from the affected intestinal glands. For this purpose, 1 or 2 grains of calomel should be given twice a day till about the tenth day, but not later. Special symptoms, such as great inflation of the abdomen (known as meteorism), hemorrhage from the intestines, etc., must be treated by the ordinary rules: probably the best single remedy for this form of hemorrhage is oil of turpentine in doses of 5 to 20 drops every hour or two—administered best in an emulsion with gum arabic, white sugar, and water. The diet is of utmost importance from the beginning of the disease till complete recovery ensues. From the various forms of farinaceous food, e.g., corn-starch, arrowroot, rice, sago, tapioca, bread, etc., from eggs beaten into custard, and milk with or without lime-water (or, preferably, aerated water), an abundant, bland, and nourishing dietary can be selected. All animal food, except eggs and milk, must be rigidly prohibited. Even beef-tea and mild broths have often been found to exert a special irritant action on the overcharged glands of the ileum. During convalescence, no meat should be allowed till at least a week has elapsed after all febrile symptoms have vanished; and the only admissible means of opening the bowels are by castor-oil or simple enemata. As liability to typhoid diminishes with age, middle-aged attendants should be selected.

Both typhus and typhoid fever have been described under various names. Typhus has been popularly known as the jail fever, hospital fever, putrid fever, brain fever, bilious fever, spotted fever, camp fever, ship fever, etc.; while, from the peculiar lesions associated with typhoid, the terms enteric fever and intestinal fever have been suggested as appropriate synonyms for it. The name pythogenic fever, or fever born of putrescence, also has been given to typhoid. If the term *intestinal fever*, suggested by Dr. W. Budd, were adopted, much confusion would be prevented. Cases of continued low fever, whether typhus or typhoid, are frequently spoken of popularly and vaguely as *gastric* fevers; but the term is not recognized by the medical profession as applying in this sense. Gastritis, or inflammation of the stomach, is of course accompanied by feverishness, like all inflammations.

During the first 15 years of the 19th c. the ravages of typhus in the armies of Napoleon, and among the population of the European countries which were the seat of war, were appalling. 1812, May, the Bavarian army serving with the French numbered 28,000 men; 1813, Feb., the number was reduced to 2,250, the great destroyer being typhus. In Mayence alone, of 60,000 French troops composing the garrison 1813–4, there died of typhus alone, in six months, 25,000 men. During the spring of 1856 more than 17,000 men of the French army in the Crimea perished from typhus in less than three months. According to Parkes, typhus fever occupies the fourth place among the causes which have produced loss of life in the Brit. army, the three more potent causes being: (1) a defective commissariat; (2) undertaking military operations in an unhealthful site and with an unhealthful season impending; (3) exposure to cold, with insufficient clothing and food.—For further details of these two important diseases, see articles on Typhus and Typhoid fevers in Quain's *Dictionary of Medicine* (1882).

TYPIC, TYPICAL, TYPIFY: see under TYPE.

TYPOGRAPH, *tī'pō-grăf*, a type-making and type-setting machine of recent invention.

TYPOGRAPHY, n. *tī-pŏg′ră-fĭ* [Gr. *tupos*, a type or figure; *graphō*, I write]: the art or operation of printing (see below). particularly, the preparation of matter in type for printing, or the result of that printing as regards general character and appearance, as, the *typography* is good (see below). **Typographic**, a. *tī′pō-grăf′ĭk*, or **Ty′pograph′ical**, a. *-ĭ-kăl*, pertaining to the art or act of printing; employed or made in printing; in *OE.*, emblematic; figurative. **Ty′pograph′ically**, ad. *-lĭ*. **Typographer**, n. *tī-pŏg′ră-fėr*, a printer.

TYPOG′RAPHY: printing from a surface in relief; letter-press printing, whether from movable type, or from stereotype or electrotype plates made from movable type, or from engraved blocks of wood such as are used for illustrations in books or are in use among the Chinese, etc., and still to some extent in Japan for book-work (see **Xylography**); or, lastly, from plates prepared by photozincography, photogravure, and similar processes. T. is thus distinguished (1) from *Chalcography* (q.v.), or copperplate printing, in which the lines are incised on a metallic surface; and (2) from *Lithography* (q.v.), in which the lines to be reproduced are written or drawn on the smooth face of a certain kind of stone.—The term is applied also to the general character or appearance of printed matter: thus, we may speak of the T. of a work as very poor, good, etc.

TYPOLOGY, n. *tī-pŏl′ŏ-jĭ* [Gr. *tupos*, a type or form; *logos*, discourse]: the doctrine of types or figures: see **Type**.

TYR, *tĭr:* in Old Norse mythology, the god of war; called in Anglo-Saxon *Tiv*, *Tiw*, and in Old High German *Ziu* or *Zio*. He was son of Odin, and was, according to the Edda, single-handed. When the Asa-gods persuaded the wolf Fenrir to allow himself to be bound with the bandage Gleipnir, Tyr put his right hand in the wolf's mouth, as a pledge that he would be loosened; and when the gods refused to release him, the wolf bit off Tyr's hand to the wrist, which was called, in consequence, *Ulflithr*, or the Wolf's Joint. In the twilight-battle of the gods, he meets his death at the same time with his enemy, the monster dog Garmr. The Old Norse Runic character ᛏ bore the name of the god. The third day of the week, too, the *Dies Martis* of the Romans, is called after him, in Old Norse, *Tyrsdagr;* Ang.-Sax. *Tivesday* (from which our English *Tuesday*); Old Friesic, *Tysdei;* Old High German, *Ziuwestac;* in n. Germany, *Tiestac* or *Diestac*, from which the German of the present time, *Dienstag*. Places, and particularly hills and plants, were named after him. The word Tyr appears in epithets of Odin, signifying god in a general sense—e.g., *Sigtyr*, i.e., the god of victory; also in epithets of Thor, as *Reidhartyr*, god of the chariot or of thunder.

TYRANT, n. *tī'rănt* [L. *tyrannus;* Gr. *turannos*, a ruler, a king: It. *tiranno;* F. *tyran*]: *originally*, a king or ruler, especially one who had obtained power illegally; a usurper; *now*, a ruler or sovereign who uses power to oppress; one who abuses his rule or authority by acts of oppression and cruelty; a despotic ruler; an oppressor. **Tyrannical**, a. *tī-răn'nĭ-kăl*, pert. to a tyrant; that acts as a tyrant; unjustly severe; arbitrary; despotic; cruel. **Tyran'nically**, ad. *-lĭ*. **Tyran'nicalness**, n. *-nĭ-kăl-nĕs*, despotic disposition; oppressive exercise of power. **Tyran'nic**, a. *-nĭk*, in *poetry*, tyrannical. **Tyran'nicide**, n. *-nĭ-sīd* [from *tyrant*, and L. *cædo*, I cut, I kill]: the act of killing a tyrant; one who kills a tyrant. **Tyrannize**, v. *tĭr'ăn-nīz*, to act the part of a tyrant; to rule with unjust and oppressive severity. **Tyr'annizing**, imp. **Tyr'annized**, pp. *-nīzd*. **Tyr'annous**, a. *-nŭs*, tyrannical; arbitrary. **Tyr'annously**, ad. *-nŭs-lĭ*. **Tyr'anny**, n. *-nĭ*, the government or acts of a tyrant; an arbitrary or despotic exercise of power; cruelty; unjust severity.—*Tyrant*, in modern usage, is an arbitrary and oppressive ruler; but originally it meant a ruler who had obtained power illegally, and was therefore equivalent to our word *usurper*. The ancient Greek 'republics' were generally aristocratic and even oligarchic in their constitution. When the 'governing families' among the Athenian or Syracusan nobles, e.g., quarrelled with each other, it was natural, if they could not otherwise agree, that the boldest and most reckless of the set should seek for success by allying himself with the masses of the people, should figure as their champion, promise to redress their wrongs or increase their comforts, and, when a fitting occasion offered, should, by a clever or violent stratagem—*coup d'état*, it is now called—deliver them from the domination of his order by himself grasping absolute power, and ruling without any other restraint than the necessity of retaining his popularity—even this limitation being frequently absent when a bodyguard of foreign mercenaries rendered it superfluous. If the political adventurer who thus rose on the ruins of the constitution happened to be a man of sense and wisdom and generosity, his 'tyranny' might prove a blessing to a state torn by the animosities of selfish oligarchs, and be the theme of praise in after-ages, as was the case with the 'tyrannies' of Peisistratos (q.v.), Gelon (q.v.), Hiero II. (q.v.), and many others; but if he was insolent, rapacious, and cruel, then he sought to reduce the citizens to a worse than Egyptian bondage, and his name became infamous to all time—e.g., most of the 'Thirty Tyrants of Athens' (q.v.), particularly the blood-thirsty Critias, Alexander of Pheræ, Dionysius the Younger, etc. Such outrages gave the word tyrant in later antiquity that evil significance which it has ever since retained.—See Plasz, *Die Tyrannis bei den Griechen* (Bremen 1852); Wachsmuth, *Hellen. Alt.*, I. 279–288; and Histories by Thirlwall and Grote.

TYRANT-SHRIKE, or **Tyrant Fly-catcher**: see **King-bird**.

TYRCONNEL, *tir-kŏn'nĕl* (RICHARD TALBOT), Duke and Earl of: born early in the 17th c., d. 1691, Aug. 14. In his youth, according to Lord Macaulay, he was 'one of the most noted sharpers and bullies of London.' Soon after the Restoration (q.v.), he contrived to make himself welcome at the palace both as a votary of its pleasures and as a counselor in affairs of state. Immediately on the accession of James II., he was made earl of T., and put in command of the troops in Ireland; and, 1687, by fawning, bullying, and bribing, he got the office of lord-deputy of Ireland. His arrival in that country spread dismay through the Eng. Prot. population. Nearly every office of dignity in the country was soon transferred to the hands of Roman Catholics. The long-dominant Prot. party complained bitterly that appeal to law was vain; judgment in every case being given for the native against the Englishman. But the revolution of 1688 had a sobering effect on his rule, and he would probably have submitted to William III.; but the Irish people threatened that, if he dared sell them for wealth or honors, they would burn the castle and him in it, and put themselves under protection of France. On James's arrival in Ireland 1689, the earl was created Duke of Tyrconnel. After the fatal battle of the Boyne (q.v.), at which he held high command, he retired to France. In 1691 he returned to Ireland, to further the efforts still made in behalf of James. Notwithstanding the defeat of Aghrim (1691, July 12) and the capitulation of Galway, he made preparations for defense of Limerick, binding himself and his countrymen by an oath not to surrender until they received permission from James, then at St. Germain—at the same time dispatching a letter in which he stated his conviction that all was lost. Before an answer could arrive, he was struck with apoplexy, and died.

TYRE, *tīr* (Phœn. *Sûr* or *Sôr*, rock): the most famous city of ancient Phœnicia, lat. 33° 12′ n., named probably from the double rock on which it was first founded. It was doubted among the ancients themselves whether T. or Sidon was the older, and the question is not settled; though it seems certain that T. had long existed independently when Sidon, defeated by Ascalon, transferred herself almost bodily to T. (see PHŒNICIA). There were two towns of T. closely connected in historical times—one on the continent, the other on the island opposite, together comprising (according to Pliny) about 19 Roman m. The more important of the two was the continental town, Palæ Tyrus; while the island-town served more or less for storehouses, manufactories, arsenals, and the like. The entire city was in a fertile region; and its magnificent combination of land and sea scenery formed the theme of many an ancient poet and seer.

Nothing but myths have come down to us respecting T. in its earlier period. Its history dawns on us with Abibal, predecessor of the biblical Hiram, under whose rule (B.C. 980–947) T. attained its full glory and renown. An alliance with Solomon was entered into; trading expeditions were undertaken jointly by the Israelites and the Phœnicians; and Solomon is supposed even to have married Hiram's daughter. During Hiram's reign, T. was much enlarged and embellished; and its two roadsteads and harbors, among the wonders of the ancient world, date probably from the same period. He was followed, according to ancient writers, by Balæastartus; after him reigned, for brief periods, his four sons, by the murder of the last of whom the throne became hereditary in the House of Ithobaal, the Ethbaal of Scripture, whose daughter was married to King Ahab. T. then appears to have gained the supremacy over Sidon, and also spread her colonies far and wide. Shortly after the death of this king, Carthage was refounded by Elissa (Dido), about B.C. 813, in consequence of a popular demonstration which deprived her of the throne in favor of Pygmalion. This 'new city' gradually diminished the importance of the old one; at least T. seems to have been weakened to such an extent by the emigration of its best elements that it disappears from history until the three great powers, Chaldæa, Assyria, and Egypt, by turns endeavored to make themselves masters of the Tyro-Phœnician coast, with its e. and w. trade. Shalmaneser, King of Assyria, reduced T., after a long siege; and the whole of Phœnicia, the most important places of which had already thrown off their allegiance to T., was rendered tributary to Assyria. During the Chaldæo-Egyptian struggle, T., again at the head of the country, sided with Egypt and was conquered by the Chaldæans. Once more the Phœnicians attempted to throw off the foreign yoke, and Nebuchadnezzar marched against them at the head of his armies. Having taken Jerusalem B.C. 587, he reduced the whole sea-coast, except T., which stood 13 years' siege by water and by land, ending, not in subjection, but only in an apparent submission, leaving the native sovereigns on their thrones, and their wealth and power untouched. In B.C. 538 Cyrus became master of Phœnicia, which at that time again was under Babylonian supremacy; and the hegemony was bestowed on Sidon. For a long time Phœnicia prospered under wise Persian rulers; but when Xerxes, in his Greek wars, had completely destroyed the Phœnician fleet, and exhausted nearly all her resources, the exasperated inhabitants rose once more, but only to be utterly crushed. Sidon, at the head of the revolution, was fired by its own inhabitants, and again T. resumed the lead (B.C. 350). Having refused to pay allegiance to Alexander the Great (after the battle at Issus), it was besieged by him B.C. 332, and fell after seven months' hard resistance. Alexander replaced the old inhabitants by new colonists, chiefly Carians; and though the city had been almost destroyed, it rose again after a brief period to wealth and power, and B.C. 315 was able to hold out 18 months against Antigonus. Under the Romans, Cleopatra received T. as a present from Antony; but the last trace of its independent existence was taken from it by Augustus. A Christian community had then been founded there. The trade and manufacture of T., aided by its exceptionally favorable naval position, gave it, even under Roman dominion, a high place among its sister cities; and once again, A.D. 193, it even took active part in the contest between Septimius Severus and Pescennius Niger, which, resulting in the success of Severus, brought back to it some of its ancient distinction. In St. Jerome's time it was again the most beautiful city of Phœnicia, and one of the most prosperous cities of the whole East. In the 7th c. it came under the dominion of the Saracens, and so remained until taken by the Crusaders; and in 1192 became the n. boundary of Christian territory in Palestine. It continued to flourish—still chiefly through its renowned manufacture of purple—until 1516, when the conquest of Selim I., together with the newly discovered route to Asia, by the Cape of Good Hope, put an end to its wealth and commerce, and almost to its existence. Although there has been a slight improvement in its prospects of late, the magnificent city of old still presents a scene of desolation and wretchedness. About 5,000 inhabitants now dwell in Sûr, among the ruins of its ancient glory, finding scanty livelihood in exports of tobacco, cotton, wool, and wood.

TYRIAN, a. *tĭr'ĭ-ăn:* pertaining to anc. *Tyre;* richly purple, as from the anc. Tyrian dye: N. a native of Tyre.

TYRNAU, *tĭr'now* (Magyar, *Nagy-Szombath*): town of Hungary, county of Ober-Neutra; on the river Trua, about 30 m. n.e. of Presburg. It has so many churches and convents that it has been nicknamed 'Little Rome.' There are manufactures of cloth, linen, wood, etc., and a general trade, especially in wine. 1635–1774 it possessed a univ., which was transferred (1774) to Pesth. T. is noted for a huge cask, holding twice as much as the Heidelberg tun.—Pop. 10,824,

TYRO, n. *tī'rō* [L. *tiro*, a young soldier: It. *tirone*]: a beginner in learning; one engaged in learning the mere rudiments; a novice; a person having an imperfect or slight knowledge of the subject. **Ty'ronism**, n. *-rō-nĭzm*, the state of being a tyro; novitiate.

TYROL, *tĭr'ol*, Ger. *tē-rōl'* (in German commonly spelled *Tirol;* not spoken of as *das T.*, though usually called among English-speaking people *The T.*): Austrian province (with Vorarlberg), the most westerly of the Austro-Hungarian monarchy; bordering n., w., and s. on Bavaria, Switzerland, and Italy; 11,280 sq. m., including Vorarlberg.—Pop. (1890) including Vorarlberg, 928,769.

Surface.—The T. may be regarded as an e. continuation of Switzerland. It is traversed from e. to w. by the great chain of the Alps, and is encircled by lofty ranges. It consists, however, almost entirely of three great valleys—(1) one running e. and w. n. of the Great Alps, and drained by the Inn; (2) one s. of the Alps, also running e. and w. and drained by upper tributaries of the Adige or Etsch; (3) one running s. from the middle of the second, and drained by the main stream of the Adige. These valleys are surrounded by a circuit of mountains The n. valley is separated from Bavaria by the Algau Alps. The s. valley is bounded e. by the Trent Alps; w. by the

Ortler Alps, which, like protecting walls, extend s. into the plain of Lombardy. The main chain is crossed toward the centre of the T. by a deep depression, in which is the Brenner Pass (elevation 4,657 ft.)—lowest of the great passes of the Alps, and that over which runs the great commercial route between Italy and Germany.

The dialect and manners of the Bavarians prevail in the n. and middle valleys. The dialect and manners of Lombardy, on the other hand, have crept up the third valley to a boundary-line which rests on the mountains that bound the middle valley on the s. Hence the most important divisions of the T. are the German T. and the Italian T.—The German T. is divided into (1) the Oberinnthal, or the Upper Inn Valley; (2) the Unterinnthal, or the Lower Inn Valley; (3) the Vintschgau; (4) the Etsch district; (5) the Pusterthal—the last three belonging to the middle valley of the Tyrol. Beyond the geographical limits of the T., the Austrian province of the T. includes (6) the Vorarlberg, a dist. drained by streams which fall into the Lake of Constance, and in which a dialect is spoken resembling the dialects of German Switzerland; and (7) the Lienz district, on the Drave, in which the language is Austrian.—The Italian T. is divided into (1) a n. valley, that of Trent; (2) a s. valley, that of Roveredo; (3) the valley of the Sarca, or dist. of Riva, on Lake Garda.

Geology and Soils.—The rocks are chiefly crystalline Silurian and Secondary, with obtruding granites and traps. The chief mineral products are iron, rock-salt, worked near Innsbruck, and marble, quarried in the south. The Tertiary strata of the Swiss and Swabian plains are totally lacking: and only along the water-courses are found level tracts of recent formation. These tracts are the only parts of the country admitting cultivation by the plow, and they very seldom attain a width beyond half a mile.

Climate.—The loftiest mountains are—in the main chain of the Alps—the Gross Glockner (12,776 ft.), e. of the Brenner Pass, and Mt. Gebatsch (12,276 ft.), w. of it; and, in the Ortler chain, the Ortler Spitz (12,818 ft.). These mountains are covered with vast glaciers, extending, like those of Switzerland, far down into the valleys. Between 6,000 and 5,000 ft. of altitude, snow disappears in summer, and alpine plants and grass cover the hills, diversified here and there with stunted bushes. Into this region the herds are driven, as in Switzerland, during summer. Below 5,000 ft. firwoods abound; potatoes and a few vegetables are cultivated, and houses permanently occupied make their appearance. The beech replaces the fir at 4,000 ft., and agriculture begins, the chief grains being rye and barley. Wheat is not cultivated with success higher than 2,000 ft. In the lower part of the s. valley, the temperature is highest, and, indeed, the climate is that of n. Italy; tobacco, the fig, the olive, and the mulberry being among the chief objects of cultivation. Out of every 100 acres of the T., 30 acres are inaccessible mountain tracts, 40 acres forests, 20 acres commons and meadows, and 10 acres corn-fields and gardens.

Industry.—The industries are not important. There are, however, glass and paper factories near Innsbruck; and carpets, linens, gloves, and straw hats are manufactured extensively for home consumption. Woodenware also is largely produced. The rearing of canaries was long a monopoly of the n. Tyrolese, who supplied all Europe with these birds. Exports from the T. consist of cattle, cheese, timber, wine, tobacco, silk, iron, and salt: imports are grain and manufactured goods. The transit-trade between Italy and Germany employs many of the inhabitants. Thousands migrate annually into neighboring countries, to sell their wood-wares, gloves, and carpets. Railways connect Innsbruck with Munich, and Botzen with Verona; and the section between Innsbruck and Botzen, over the Brenner Pass, opened 1867, completed the first railway-communication between Italy and Germany.

Inhabitants.—The N. or German Tyrolese bear to the S. or Italian the proportion of three to two; and the habits and language of the two populations resemble those of adjoining parts of Italy and Germany. In the T., according to the census, the inhabitants all are Rom. Catholics, except 358 Jews, 1,235 Protestants, 29 Greek Christians, and a few members of other sects. The Tyrolese have an independent national diet, meeting at Innsbruck, in which are represented all classes of the population, the clergy, the nobility, the people of the country, and those of the towns. There are, to some extent, separate administrative arrangements for the Italian districts. Education is now generally diffused, and one of the nine Austrian universities is at Innsbruck.

History.—The history of the T. is partly German, partly Italian. In early times the T. formed part of Rhætia, and was conquered by the Romans B.C. 15. Subsequently it was overrun by various German tribes; still later the s. valley fell to the share of the Lombards, the two n. valleys to the Bavarians. The latter valleys were divided into *gaus*, which ultimately became petty lordships, acknowledging the supremacy of the dukes of Bavaria. These lordships, however, in time came to be represented by two families who intermarried. Then the whole German T. was governed by one family of counts, whose paternal abode was the mountain fortress of Terioli, or Tyrol, near Meran. The last count (d. 1335) left one daughter, Margaret Maultasche. She bequeathed her rights to her cousins, the dukes of Austria, who thus acquired possession of the T. 1363. The Italian valley formed the bishopric of Trent. During the wars of Napoleon, the German T. was ceded to Bavaria, much to the discontent of the population, who were warmly attached to the House of Austria. They made a gallant resistance to the French 1809, under Andreas Hofer, but were defeated, and the Northern T. was not restored to Austria until the treaty of Paris 1814. The Southern T., which had been annexed to Italy, was restored to Austria in the following year. An application was made by the inhabitants of the Italian T., a few years ago, to the Austrian govt., to be rendered entirely independent of the German inhabitants of the n. valleys—which, though leading to no important change, showed the desire of the Southern Tyrolese to be considered Italians rather than Germans; and it was believed that, on the event of a successful war for the recovery of Venice, the whole of the Southern T. would be transferred to the kingdom of Italy. This expectation has not been realized. By the treaty of peace between Austria and Italy, at the end of the war through which Venetia again became Italian, it is declared that the frontiers of the Venetian provinces ceded to Italy are the administrative frontiers of these provinces under the Austrian rule. Even the shores of Lake Garda remain Austrian. How long this arrangement will last, is not to be predicted. The trade of the Southern T. is entirely with the south, its wood and cattle being exchanged for the grain of Lombardy. Of late there has repeatedly been agitation in Italy for securing incorporation with that kingdom of what is called *Italia Irredenta* ('unredeemed Italy'), which includes, with Trieste and part of the Dalmatian sea-board, the *Trentino* and Southern Tyrol.

TYROLESE, a. *tĭr'ō-lēz:* pertaining to the *Tyrol*, in Austria: N. the natives of the Tyrol, or one of them. **TYROLIENNE**, n. *tĭr-ŏ'lē-ĕn*, a melody or song of the Tyrolese mountaineers, characterized by yodels, or frequent changes from the natural to the falsetto voice.

TYRONE, *tĭ-rōn':* borough in Blair co., Penn.; on Little Juniata river, and on the Pennsylvania railroad; 14 m. n.n.e. of Altoona, 131 m. e. of Pittsburgh. It is an important manufacturing place; has 6 churches, 1 national bank (cap. $75,000), 2 private banks, 1 daily and 2 weekly newspapers; bloom forge, railroad repair shops, and several planing-mills; and has large trade in iron products, flour, paper, leather, lumber, coal, lime, and furniture.—Pop. (1880) 1,840; (1890) 4,705.

TYRONE, *tĭ-rōn'* (*Tir-owen*, 'Owen's country'): inland county of Ulster, Ireland; bounded n. by Londonderry, e. by Armagh and Lough Neagh, s. by Monaghan and Fermanagh, w. by Fermanagh and Donegal; greatest extent n. to s. 46 m., e. to w. 60; 1,260 sq. m., or 806,658 acres, of which 450,286 are arable, 311,867 uncultivated: of the arable land (1885), 237,528 acres were under crops. The surface, in general, is hilly, and often extremely picturesque, this county lying for the most part between the two mountainous districts which traverse Ulster from e. to w. The lakes, except Lough Neagh, are small. The principal rivers are the Blackwater, the Camowen, and the Ballinderry, the former two navigable. Railways connect the county with Dublin, Belfast, and the sea-coast at Dundalk. The geological structure is diversified. The n.w. mountains are chiefly mica-slate, with primitive limestone, and rise in Slieve Sawel 2,236 ft. Those on the n.e. are of greenstone, with granite and occasional red sandstone. The plain, of which Omagh is the centre, is a Tertiary formation, with irregular beds of lignite, red marl, and new red sandstone; and between Dungannon and Stewartstown is a small coal-field. The rest of the plain belongs to the general limestone district. The climate is moist, and the low lands are often flooded. The soil of the plain is a fertile loam; that of the hilly districts, sandy or gravelly. There is large proportion of bog, whose turf supplies the chief fuel. Among the chief towns are Omagh, and Clogher, which gives its name to the episcopal see. T., anciently known as the district of Hy-Briun and Hy-Fiachra, was in later Celtic times called Kinel Eogain, or Tir-owen, whence its modern name. See ULSTER.—Pop. (1841) 312,956; (1871) 215,766—of whom 119,937 Rom. Catholics, 49,201 Anglican Protestants, 42,156 Presbyterians; (1881) 197,719; (1891) 171,278

TYROSINE, n. *tĭr'ō-sĭn:* a substance formed along with leucine in certain stages of digestion.

TYROTOXICON, *tĭr-ō-tŏks'ĭ-kŏn* [Gr. *turos*, cheese; *toxikon*, poisonous]: a putrefactive product sometimes found in milk and in cheese: to its action are due the symptoms of poisoning that sometimes ensue after eating ice-cream: see PTOMAINE.

TYRRHENIAN SEA, *tĭr-rē'nĭ-an* (anc. *Tyrrhenum Mare*): that part of the Mediterranean Sea (q.v.) between the islands of Corsica, Sardinia, and Sicily, on the w., and the Italian peninsula, on the east.

TYRTÆUS, *tėr-tē'ŭs:* Greek poet, famed for his political elegies and marching-songs: about B.C. 650. His birthplace is not known: a probable conjecture makes him son of Archembrotus, of Aphidnæ, in Attica; another conjecture is that he was a Lacedæmonian; and a legend, the growth of later times, represents him as a lame schoolmaster, of mean family, whom the Athenians (ignorant of his lyric power, and jealous of Lacedæmonian domination in the Peloponnesus) sent to the Lacedæmonians, during the second Messenian war, as the most inefficient commander they could select. T. rendered to the Lacedæmonians a kind of assistance which the Athenians little foresaw; for while by his elegies he stilled their dissensions at home, by his war-lyrics he so animated their courage in the field that they were finally triumphant in their conflict with the Messenians, whom they reduced to the condition of Helots. This success of his poems T. lived to see, and must accordingly have lived till B.C. 668, the last year of the second Messenian war. The best ed. of the text of T. is that of Bergk in *Poetæ Lyrici Græci*.

TYTLER, *tĭt'lėr*, ALEXANDER FRASER (Lord Woodhouselee): Scottish judge and historian: 1747, Oct. 15—1813, Jan. 5; b. Edinburgh; eldest son of William T. (q.v.). He was educated in Edinburgh and at an excellent school in Kensington; and was admitted to the Scottish bar 1770. He obtained, 1780, a professorship of history in the Univ. of Edinburgh; 1790, the office of judge-admiral of Scotland; and 1802 was raised to the bench of the court of session. His acquirements were varied, comprising literature and the fine arts. His writings include a biography of Henry Home, Lord Kames; a Dictionary of Decisions of the Court of Session (1778); and the work by which he is best known, *Elements of General History* (1801), which has been translated into most of the languages of Europe, and even into Hindustani.

TYT'LER, Patrick Fraser: eminent historical writer: 1791, Aug. 30—1849, Dec. 24; b. Edinburgh; fourth son of Alexander Fraser T. (Lord Woodhouselee). He was educated mostly in Edinburgh, partly in England; and was called to the Scottish bar 1813. Of his various literary and historical works, the most valuable is *History of Scotland* (1828–43), beginning with the accession of Alexander III., and terminating with the union of the crowns; a book of more critical and original research than any previous work on the subject. Its style is clear and graphic. It was undertaken at the suggestion of Sir Walter Scott, and occupied its author 20 years. His writings include also a life of the Admirable Crichton, life of Wickliffe, memoir of Sir Thomas Craig, and a collection of original letters, illustrative of the reigns of Edward VI. and Mary. For his merits as a historian, Sir Robert Peel's govt. conferred on him a pension of £200 a year. He died at Great Malvern. T. was brilliant in society, and amiable and excellent in private character.—See Burgon's *Life* (1859).

TYT'LER, William: historical and antiquarian author: 1711, Oct. 12—1792, Sep. 12; b. Edinburgh. He was educated at Edinburgh Univ., admitted a member of the Soc. of Writers to the Signet in 1744. He was father of Alexander Fraser T. (Lord Woodhouselee), and grandfather of Patrick Fraser T., the historian. T. was an accomplished musician, and distinguished for his general culture and taste in the fine arts. His principal work was an *Inquiry, Critical and Historical, into the Evidence against Mary Queen of Scots*, in which it is attempted to vindicate that unhappy princess from the charges brought against her by Robertson and Hume.

TZA'NA, Lake of: see Dembea.

TZAR, TZARINA: see Czar.

TZETZES, *tsĕt'zĕz*, **Johannes**: Byzantine (Greek) author: latter half of the 12th c. His works in prose and verse, though without a trace of literary genius, supply classical information not elsewhere found. The principal are: 1, *Iliaca*—three poems, entitled *Ante-Homerica*, *Homerica*, and *Post-Homerica;* or, in Greek, *Ta pro Homerou, ta Homerou, kai ta meth' Homeron* (complete ed. pub: first by Fr. Jacobs, Leip. 1793; but best critical ed. by Bekker, Berl. 1816); 2, *Biblos Istorike*, commonly called *Chiliades*—collection of more than 600 stories, mythical, legendary, etc. (best ed. by Kiessling, Leip. 1826), written in that worthless sort of verse called *political*, which had regard only to syllables, and not to quantity: other works were commentaries on Homer, Hesiod, and the *Cassandra* of Lycophron. Several poems and commentaries of T. exist in MSS.—T.'s brother Isaac probably had some share in the commentary on the *Cassandra*.

U

U, u: 21st letter and 5th vowel of the Eng. alphabet; representing in that language three distinct sounds, as heard in *tube*, *tub*, and *full* (the *u* in *full* having the sound of *oo* in *book*). The last (as in *full*) is its primitive sound, which it had in Latin, and which it has preserved in German and Italian, but which is denoted in English oftener by *oo* (as in *good*). In *tube*, *u* is not considered to mark a pure vowel sound, but to be slightly aspirated, almost as if coalescing with a prefixed *y*—*tyub*. The sound heard in *tub* is characteristic of English; and, owing, perhaps, to the decided emphasis given to one syllable of a word at the expense of the rest, there is a tendency to allow the other vowels, *a*, *e*, *o*, when unaccented, to degenerate into this indistinct, stifled sound: *cavalry*, *sister*, *fashion*, are pronounced almost, if not altogether, as if written *cavulry*, *sistur*, *fashun*. This is the case especially with *o;* and in *o* the degeneracy is not confined to unaccented syllables; in a whole host of words, the accented *o* is exactly equivalent to *ŭ*—e.g., *come*, *money*, *among*. Perhaps a similar tendency in Latin may account for the prevalence of *u* in that language as compared with Greek—e.g., L. gen*us* = Gr. gen*os*; vol*u*mus = boul*o*metha; spat*u*la = spat*a*le; scop*u*l*us* = skop*e*l*os*. *U*, in Latin, sometimes goes into the still thinner sound of *i:* thus, *maxumus*, *caputis*, degenerated into *maximus*, *capitis*. Of the labial series of vowels (see LETTERS), *u* approaches nearest to the labial consonants—so much so that in Latin the vowel *u* and the consonant *v* were both denoted by the same character, *v*, of which *u* is only a later modification. In the middle ages the two characters were used indifferently whether as vowel or consonant; and it was not till the 16th c. that the Dutch scholars fixed the use of the character *u* for the vowel, as distinct from *v*.

UBEDA, *ó-vā'thâ:* town of Spain, Andalusia, in the modern province of Jaen; on an olive-clad slope in a cultivated plain, 26 m. n.e. of the town of Jaen. It contains some fine specimens of architecture, of which the chief is the cathedral. The industries are agriculture, and manufacture of porous vessels of red and white clay. U. was built by the Moors, and under them it is said to have contained 70,000 inhabitants.—Pop. (1887) 18,163.

UBIETY, n. *ū-bī'ĕ-tĭ* [mod. L. *ubietas*—from L. *ubi*, where]: in *philos.*, the presence of one thing with regard to another; the presence of a thing in place; state or condition of being in a place. According to the Schoolmen, ubiety might be: (1) Circumscriptive, as when all the parts of a body are answerable to the parts of space in which it is, and exclude any other body. (2) Definitive, as when a human soul is limited in its presence to the same place as a human body. (3) Repletive, as when God is present through every portion of space. This last form is sometimes called Ubiquity.

UBIQUITOUS, a. *ū-bĭk'wĭ-tŭs* [F. *ubiquité*, ubiquity—from L. *ubīquĕ*, everywhere—from *ubi*, where]: existing or being everywhere; omnipresent. UBIQ'UITOUSLY, ad. *-lĭ*. UBIQ'UITARY, a. *-wĭ-tėr-ĭ*, existing everywhere or in all places: N. one who exists everywhere. UBIQUITA'RIAN, n. *-tā'rĭ-ăn*, one who teaches or believes that Christ as man is omnipresent; a Ubiquist. UBIQ'UITY, n. *-wĭ-tĭ*, existence everywhere at the same time; omnipresence. UBIQUISTS, n. plu. *ū'bĭ-kwists*, a Lutheran sect which arose about the middle of the sixteenth century, and which asserted the omnipresence of Christ's body, especially in the Eucharist.

UBI SUPRA, phrase, *ū'bī sū'prā* [L., where above]: in the place or passage above mentioned; noting reference to some passage or page previously named or referred to.

UCAYALI, *ō-kī-â'lē*, RIVER: great river of Peru, one of the chief head-waters of the Amazon, which it joins from the s., in s. lat. 4° 40′ and w. long. 73° 30′, opposite the town of Nauta. It is the largest river that joins the Amazon above Brazilian territory, and has been regarded by some as the main stream of the Amazon; but at its mouth it is not more than half the width of the Amazon. Attention has been strongly directed to the U. as affording communication between w. Peru and the Atlantic. It was partially explored by Lieut. Herndon, of the U. S. navy, 1851, and more recently by a Peruvian expedition. It has been found navigable by steamers from its mouth to towns not far from Lima, 3,700 m. from the mouth of the Amazon. On a branch which comes from Cuzco, falls and rapids impede navigation more than 100 m. below Cuzco. The course of the U. is generally northward, and, including only its principal windings, its length is not less than 1,100 m. It receives many large branches. The name U. is not given to any of its head-waters, the chief of which is the Tambo, formed by junction of the Mantaro, rising n.w. of Lima, and the Apurimac, rising farther south.

UDAL, a. *ō'dăl* [Icel. *odal;* Dan. *odel*, a hereditary estate (see ALLODIUM)]: Allodial (q.v.), still applied in *Orkney* and *Shetland* to land held under no feudal superior (see ALLODIUM: ALLODIAL TENURE). UDALLER, n. *ō'dăl-lėr*, or U'DALMAN, n. *-măn*, one who holds lands without any original charter and without a feudal superior. UDAL RIGHT. in the *law of Scotland*, that right in land which may be completed without charter and sasine by undisturbed possession provable by witnesses before an inquest.

UDALL, *yŏŏ'dal* (or **Wood'all**), **Nicholas**: author: 1504–56; b. England. He was educated at Oxford, and became fellow of Corpus Christi College there; was master of Eton School 1534–43, but was dismissed because in his zeal as a reformer he had removed silver images from the chapel. Thereafter he was successively vicar of Braintree, rector of Calbern, canon of Windsor; the year before his death he became master of Westminster School. He wrote several comedies in Latin and English, for use in school exhibitions; also some poems and school-books.

UDDER, n. *ŭd'dėr* [O.Dut. *uder;* Dan. *yver;* OHG. *utar;* Ger. *euter;* Icel. *jugr;* Gr. *outhar;* L. *uber*, an udder: Ir. and Gael. *uth*, an udder, a teat]: the milk-vessel of a female beast, with the dugs or paps, particularly in cows and other large quadrupeds. **Ud'dered**, a. *-dėrd*, furnished with udders. **Ud'derless**, a. *-lĕs*, deprived of a mother's milk.

UDINE, *ŏŏ'dē-nā:* city of n. Italy, Venetia, in the province of U., formerly called also the province of Friuli; in a fertile plain, about 75 m. n.e. of Venice by railway. It is a walled town, 4 m. in circumference, with wide, handsome streets and squares. The castle, on a hill in the midst of the city, was formerly the residence of the patriarchs of Aquileia, and is now the seat of the tribunals. The Antonini Palace is a work of the architect Palladius. U. trades in silk, in copper utensils, and rosolio. There are leather, paper, and silk factories. Two m. from U. is the village of Campoformio, where, 1797, the treaty between Bonaparte and Austria was signed, by which Venice was ceded to the latter.—Pop. of U. (1892) 36,000.

UDOMETER, n. *ū-dŏm'ĕ-tėr* [L. *udus*, moist, wet; Gr. *metron*, a measure]: a water-measure; a rain-gauge.

UEBERWEG, *ü'bėr-vĕch*, **Friedrich**: educator: 1826, Jan. 22—1871, June 7; b. Solingen, Prussia. He was educated in the universities of Göttingen and Berlin, was a tutor in the Univ. of Bonn 1852–62, and was prof. of philosophy in the Univ. of Königsberg from 1862 till his death. His publications include: *System der Logik und Geschichte der logischen Lehren* (Bonn 1857, transl. London 1871); *Grundriss der Geschichte der Philosophie von Thales bis auf die Gegenwart* (3 vols. Berlin 1862–66); and *History of Philosophy* (transl. 2 vols., New York and London 1874).

UFA, *ŏŏ'fâ:* government of s.e. Russia; 47,112 sq. m.; formed 1865 out of the five n.w. districts of Orenburg, and separated from the present govt. of Orenburg by the s.w. branch of the Ural Mts. See **Orenburg**.—Pop. (1882) 1,793,260; (1889) 2,018,356.

UFA: city, cap. of the govt. of U.; on the right bank of the Biëlaia, or White river. It was founded 1574, in the reign of Ivan IV. It contains 12 churches and 24 manufactories; and the principal articles of trade are honey, wax, fat, furs, and skins. The Biëlaia, affluent of the Kama, and thus connected with the Volga, is here navigable for large ships.—Pop. (1884) 25,660.

UGANDA, *ū-gân'da:* country of central Africa, n.w. of the Victoria Nyanza (q.v.), extending from 1° n. lat. to the Kitangule river, and from e. long. 31° to the outlet of the Victoria Nyanza; about 34,000 sq. m. At the shore of the lake and in the n.w. the country is mountainous, with abundance of timber; further n. is a level region; the e. portion is undulating. The soil generally is a rich black alluvium, 2-3 ft. deep, underlaid by red sandy clay. The climate is mild, and the temperature equable. The people are a tall and handsome race, and are governed by one king; they are divided into four classes: slaves, peasants, chiefs, and 'bakungu,' or superior chiefs. The natives are warlike, and the military organization is strict. The fauna is rich in species, comprising elephants, buffaloes, zebras, rhinoceroses, hippopotami, wild boars, antelopes, lions, leopards; parrots, guinea-fowl, vultures, adjutants, eagles, flamingoes, ibises. The people (Waganda) have domesticated cows, sheep, goats, and dogs. The banana is the staple food of the people: it requires little or no cultivation. The cultivated plants of U. are the sweet-potato, and, to some extent, sugar-cane, coffee, maize, cassava, sesame, millet, pumpkins. Europeans have introduced wheat, rice, guavas, papaws, pomegranates, tomatoes, onions. Wine is made from the banana-tree. The Waganda are skilled in pottery, basket-work, wood-work, boat-building, and bark-cloth weaving. They also practice tanning, dyeing, and bead-work. In numeration they use the decimal system. The grammar of their language is highly complex; and their vocabulary is very rich. They have great skill in music, and have clear and melodious voices: their musical instruments are harmonicons, rattles, drums, horns, whistles, flutes, harps. They have no idols, but worship divers spirits or gods; they worship also deceased kings. The first Europeans to visit U. were Speke and Grant, 1860. There are Prot. and Rom. Cath. mission stations in the country. The pop. is estimated at about 5,000,000. There was fierce domestic strife in U. 1890, the so-called 'Christian' natives rising in arms to reinstate the deposed king Mwanga and to expel the actual king Karema (brother of Mwanga) and his heathen followers. With the material aid of the agent of the British and E. African Co. and of Dr. Peters, leader of a German expedition, the 'Christian' party triumphed, and restored to power Mwanga. But Karema, assisted by Arabs, after a few weeks regained his throne, and the missionaries and the E. African Co.'s agents were driven out of the country, taking refuge on an island in the lake. Again Karema was deposed, and his rival firmly established in power, while German and English agents were jealously watching each other's movements in the distracted kingdom. For his services in the restoration of Mwanga, Dr. Peters obtained 'valuable treaties and monopolies in favor of the Germans.' Until 1893 the Imperial Brit. E. Africa Co. administered the U. kingdom, but in that year withdrew, and a British protectorate was declared, with a royal commission subordinate to the British agent at Zanzibar at its head. In 1896 the British parliament granted £3,000,000 for the construction of a railway from the island of Mombasa to U., a distance of 657 miles, and the first rail on the line was laid in May; a bridge was to connect Mombasa with the mainland.

The progress of 'civilization' in U. is remarkable. While only a few years ago race and creed wars of extermination were the order of the day, now peace reigns undisturbed, and the native police and the British garrison have little trouble in maintaining order everywhere. Christian churches have been established, and converts have been numerous. Good roads are being made, and towns are assuming a European air. The chiefs and notables live in two-story houses of brick or stone, with floors carpeted and the apartments furnished in European fashion. A burglar-proof safe adorns the office of the king's prime minister. The king himself (1896) ordered a brougham from England; several of his high officers sent for dog-carts, and scores of bicycles were arriving.

UGH, interj. *ŭ* or *ŭch*, with guttural *ch:* an expression of disgust or horror usually emphasized by a shudder.

UGLITCH, *ôg-lĕtch':* one of the oldest towns of Great Russia, govt. of Jaroslav; on the right bank of the Volga, 488 m. s.e. of St. Petersburg. In early times it was the chief town of an independent principality. It is now again thriving.—Pop. (1883) 11,930.

UGLY, a. *ŭg'lĭ* [from the interjection *ugh*, expressing fear or horror: Icel. *ugga*, to fear, to doubt; *uggligr*, frightful, alarming: Goth. *ogan*, to fear: OE. *uglike* or *ugly*, used formerly in the sense of *horrible*]: displeasing to the eye: frightful; deformed; perverse of disposition; morally repulsive; *familiarly*, dangerous, as an *ugly* customer. **Ug'liness**, n. *-nĕs*, total want of beauty; moral depravity. **Ug'lily**, ad. *-lĭ*.

UGOLINO DELLA GHERARDESCA, *ô-go-lē'no dĕl'lâ gā-râr-dĕs'kâ*, Count: Italian nobleman of the 12th c., known chiefly for his cruel death, which Dante has made memorable in his *Inferno*. U. was for a time the head of the party of the Guelphs at Pisa; but a conspiracy, led by Abp. Ubaldini, a Ghibelline leader, was formed against him, and with his sons and grandsons he was cast into the tower of Gualandi, and left to perish miserably by starvation. See Gherardesca.

UGRIANS, *ū'grĭ-anz*, or **U'grian Finns**: a division of the Finnic race, comprising the Voguls, who extend from the Ural Mts. e. to near the Obi river, in Siberia, and s. as far as Tobolsk; the Ostyaks, from the Voguls e. to the Yenisei river, and from the Arctic circle to n. lat. 59°; and the Magyars of Hungary. Some ethnologists employ the term U. as a general one to designate Finns, Laps, Permians, Ostyaks, etc.: see Finns: Mongols.

UGSOME, a. *ŭg'sŭm:* in *OE.* and *Scot.*, ugly. **Ug'someness**, n. *-nĕs*, ugliness.

UHLAN, or **Ulan**, n., *ū'lăn* [F., a lancer—from Pol. *ulan;* Turk. *oglan*, a youth, a lad]: a light-cavalry soldier, wearing a semi-oriental uniform, armed with sabre, lance, and pistol, and employed chiefly in outpost duty, foraging, etc. Uhlans were introduced into n. Europe with the colonies of Tartars who established themselves in Poland and Lithuania. They were mounted on light active Tartar horses, and served mostly as 'irregulars.' Their lance was 5½ to 6½ ft. in length, and, like that of the modern 'lancers,' was attached to a stout leather thong or cord, which was fastened to the left shoulder, and passed round behind the back, so as to allow the lance to be couched under the right arm. Immediately below its point was attached a strip of gaudy-colored cloth, whose fluttering was intended to frighten the enemies' horses. The early dress was similar to that of the Turks, and the regiments, or *polks*, were distinguished from each other by their red, green, yellow, or blue uniforms. The Austrians and Prussians were the first to borrow this species of cavalry from the Poles. In 1734 an attempt was made by Marshal Saxe to introduce the Uhlans into France, and a 'polk' of

1,000 men was formed; but it was disbanded at Saxe's death. The Prussian Uhlans won great renown in the Franco-German war of 1870–1 by their bravery and marvellous activity. The Prussians applied the term loosely including all their light cavalry under the designation.

UHLAND, *ô'lânt*, JOHANN LUDWIG: German poet; 1787, Apr. 26—1862, Nov. 13; b. Tübingen. He studied at the univ. of his native city. He began to publish ballads and other lyrics in various periodicals, the first collection of which, under the title *Gedichte*, appeared 1815. To this he continually added through his life, and on these *Gedichte* his fame rests. Their popularity has been, and continues to be, as great as it is merited: the 60th ed. was issued 1875. Other productions of U. are his admirable essays, *Ueber Walther von der Vogelweide* (Stuttg. 1822), and *Ueber den Mythus der nord. Sagenlehre vom Thor* (Stuttg. 1836); a masterly collection of old popular songs—*Alter hoch und niederdeutscher Volkslieder* (Stuttg. 1844–5); and two dramas, *Herzog Ernst von Schwaben* (Heidelb. 1817), and *Ludwig der Baier* (Berl. 1819). U. was a patriotic politician as well as a romantic poet. He entered the representative assembly of Würtemberg 1819 as deputy from Tübingen, and was an active member of the liberal party. He was also a delegate to the Frankfurt Assembly of 1848. He died at Tübingen. His pieces are full of spirit, imagination, and truth, finely picturesque in their sketches of nature and of character, and exquisite in their varied tones of feeling. Nothing, indeed, can surpass the brevity, vigor, and suggestive beauty of his ballads, in which a romantic sweetness of sentiment and a classic purity of style are happily combined. His poetry, in its delicate and noble tone, is a transcript of his personal character. U. is the acknowledged head of the 'Suabian School' of German poets. See Pfizer's *Uhland und Rückert* (Stuttg. 1837), and Mayer's *U.* (1867). Longfellow, in *Hyperion*, translated some of U.'s ballads into English: translations by Platt, Skeat, and Sanders also have appeared.

UIST, *wist*, NORTH and SOUTH: two islands of the Outer Hebrides; 15 to 18 m. w. of the Isle of Skye, from which they are separated by the Little Minch Their e. coasts are deeply indented, while the w. coasts are almost unbroken.—NORTH U., between which and *South U.* the island of Benbecula intervenes, is 18 m. long from w. to e., and 10 to 8 m. in breadth. The e. half is mostly a bog much cut up by lochs and watercourses. In the w. part, mostly hilly, there is a tract of uneven, low land, beautiful in certain seasons, and fertile. Pop. (1881) 3,371.—SOUTH U. is 20 m. long, 7 m. broad. The e. dist. is upland; the w. is alluvial and productive. The people almost all are Rom. Catholics. Pop. (1881) 3,825.

UITLANDER, *oyt'ländėr*, n. [Dutch *uitlander*, outsider]: in the S. African Republic, a foreigner, especially one of the Afrikander, British, American, or European pop. The U., though the chief property owner, wealth-producer, and taxpayer in the state, is denied any voice in the government. See SOUTH AFRICAN REPUBLIC.

UJEIN, or Ujjain, or Oojein, *ô-jīn':* one of the seven sacred cities of Hindustan, in Sindia's dominions, of which it was formerly the famous cap.; on the right bank of the Sipra, 35 m. n.n.w. of Indore. It is much decayed. U. is surrounded by walls with round towers, is six m. in circumference, contains the grand palace of the head of the Sindia family, several mosques and mausoleums, an observatory, and an antique gate.—Pop. (1881) 32,932.

UJHELY-SATORALYA, *ŏ'ē-hely'-sâ-tō-rŭl'yŏh:* market-town of Hungary, 105 m. n.w. of Pesth; noted for wine-culture.—Pop. (1880) 11,264.

UJIJI, *ô-jē'jē*, called also Kavele: town in e. central Africa, on the e. shore of Lake Tanganyika; s. lat. 4° 55′, e. long. 30° 5′. It is an emporium for ivory, and was formerly a great slave-market. The pop. is largely floating, and consists of Arabs and representatives of many central African tribes. The natives live in rude huts, the Arabs in houses of sun-dried bricks. The climate is said to be unhealthful. Here Dr. Livingstone was found by Henry M. Stanley 1871, Oct. 28.

UKASE, n. *ū-kās'* [Russ. *ukas*—from *kasatj*, to show, to say]: in *Russia*, an order or edict emanating from the government and having the force of law. A *Ukase*, may proceed directly from the emperor, and is then called *imenny ukas;* or it is published as a decision of the directing senate. Both forms have the force of laws till annulled by subsequent decisions. Many ukases are issued during one reign; and as an immense chaos of ukases had accumulated since 1649 (the date of the last codification of laws), Czar Nicholas ordered (1827) that a collation of them should be made. The result was a collection of laws in 48 vols., supplemented year by year by volumes of new ukases, which, after elimination of such ukases as are unimportant or temporary, constitutes the present legal code (*svod*) of the Russian empire. The *prikases* are imperial 'orders for the day,' or military orders during a campaign.

UKRAINE, *ô-krān'* (Slav., a frontier country or March): name given in Poland first to the frontiers toward the Tartars and other nomads; afterward to the fertile regions on both sides of the middle Dnieper, without definite limits. The U. was long a bone of contention between Poland and Russia. About 1686 the part on the e. side of the Dnieper was ceded to Russia (Russian U.); and at the second partition of Poland, the w. portion (Polish U.) also fell to Russia, and is mostly comprised in the govt. of Kiev. The historic U. forms the greater part of what is called Little Russia (a name which appears first about 1654), which is made up of the governments of Kiev, Podolia, Poltava, and Kharkov.

ULANS: see Uhlan.

ULCER, n. *ŭl′sėr* [F. *ulcère*—from L. *ulcus*, a sore; *ulcĕra*, sores: Sp. and It. *ulcera*]: a sore; a dangerous running sore originating in a constitutional disorder. **UL′CERATE**, v. *-āt*, to affect with ulcers; to be formed into an ulcer. **UL′CERATING**, imp. **UL′CERATED**, pp.: ADJ. affected with ulcers; having the character of an ulcer. **UL′CERA′TION**, n. *-ā′shŭn* [F. *ulcération*—L.]: the process of forming into an ulcer; an ulcer (see below). **UL′CERATORY**, a. *-ă-tėr-ĭ*, that promotes ulceration. **UL′CERED**, a. *-sėrd*, having become ulcerous; affected with an ulcer. **UL′CEROUS**, a. *-ŭs* [L. *ulcĕrōsus*, full of sores]: affected with an ulcer or with ulcers; of the nature of an ulcer; discharging pus or matter. **UL′CEROUSLY**, ad. *-lĭ*. **UL′CEROUSNESS**, n. *-nĕs*, the state of being ulcerous.—*Ulcers* may be classified according to the constitutional or specific disease from which they are derived, or according to the characters which they present. According to the first system, we speak of ulcers as healthy, inflammatory, strumous, etc.; while, according to the second, they are named irritable, chronic, sloughing, etc. In this article we adopt the former of these arrangements, as on the whole most satisfactory, though each has its advantages.

A *common*, *simple*, or *healthy ulcer* is such as is left after the separation of an accidental slough in a healthy person, and is merely a healthy granulating surface, tending to cicatrization. Its edges shelve gently down to the base, and are scarcely harder than the adjacent healthy skin. Its surface near the border is of purplish-blue tint where the young epidermis modifies the color of the healing granulations; and within this the granulations have a deeper hue than those at the centre, being most vascular where the cuticle is being chiefly developed. The discharge from such an ulcer is healthy or 'laudable' pus. The only treatment required is a little dry lint, if there is much discharge; or the water-dressing, if the sore is comparatively dry. When the granulations are too luxuriant, they must be touched with nitrate of silver, and dressed with dry lint. *Inflammatory ulcers* differ less than most kinds from the above-described common or healthy ulcers. They arise usually from some little injury, such as a blow or slight abrasion of the skin, which to a healthy person would have done no harm. Their most common seat is on the lower half of the leg or shin. The surface is red, and bleeds easily; the discharge is thin and watery; the edges irregular or shreddy; and the surrounding skin shows a red tinge, and is the seat of a hot and aching sensation. This ulcer occurs mostly in the infirm and old, the ill-fed and overworked. Hence constitutional treatment, good diet, and complete rest (with elevation of the limb) are demanded, in addition to water-dressing or lead-lotion applied warm. *Senile ulcers* usually present very little discharge, exhibit granulations of rusty-red tint, and are surrounded by a dusky-red area. Nourishing food, wine, bark, and the mineral acids are here required, and opium in small repeated doses is often serviceable. The local treatment must be stimulating; and, in bad cases, strapping the leg daily with a mixture of resin ointment and Peruvian balsam, spread on strips of lint, has been recommended on high authority. *Strumous or scrofulous ulcers* occur usually as the consequence of scrofulous inflammation in the subcutaneous tissue or lymphatic glands. They are most frequent in the neck, groins, cheeks, scalp, and the neighborhood of the larger joints. The discharge is thin and of greenish-yellow tint. These ulcers are seldom very sensitive or painful. The general treatment must be that recommended for constitutional Scrofula (q.v.). Iodine, in some form or other, is the best local application. A poultice of bruised and warmed sea-weed is a very popular remedy; but there is probably nothing so efficacious as tincture of iodine diluted with water till it causes only a slight discomfort, and applied three or four times a day (about 30 drops of the tincture may be added to an ounce of water, to begin with).—Among many other species of ulcers distinguished by Sir J. Paget, are the *Varicose*, *Indolent*, and *Sloughing Ulcer*. *Varicose ulcers* are connected with an enlarged or varicose state of the veins of the lower extremity, which, by weakening the parts, renders them especially liable to ulceration: see VARICOSE VEINS. *Chronic*, *indolent*, or *callous ulcer*, is seated usually in the lower half of the leg, and is generally of oval form, with its long axis parallel to that of the leg. 'Its base lies deep, and is flat, pale, or tawny and dusky, with very minute or no visible granulations. The margin is usually abrupt, or unequally shelving, and in its most characteristic form strictly overlaid with opaque, white, dense epidermis.'—Many volumes have been written on the proper treatment for this form of ulcer. Sir J. Paget especially recommends opium, regulated pressure, and blistering. A grain of opium night and morning is usually sufficient. The pressure is applied with straps of adhesive or lead plaster on linen. The object of blistering is not only to stimulate the ulcer, but to soften its callous edges by causing absorption of part of the exudation with which they are infiltrated, and desquamation of the cuticle which covers them. The expediency of healing old ulcers of this kind has often been questioned; inasmuch as apoplexy, palsy, mania, and other serious diseases are said to have followed the healing of such ulcers. In the following cases it may be decided that a cure should not be attempted: (1) If the ulcer be affected by the gout, having regular attacks of pain, returning at stated periods, and similar to what the patient has experienced from gout in other parts. (2) If an ulcer habitually occur whenever the constitution is disordered. (3) If the patient be very infirm and old; for under these circumstances the removal of a habitual source of irritation, or the diversion of a habitual efflux of blood, may prove fatal, and especially as very old ulcers have been known to heal spontaneously a short time before death. (4) In the case of ulcers on the legs of stout women about the critical period of life, and showing tendency to discharge profusely as the menstrual discharge diminishes.—To counteract the dangerous tendencies in cases of the above classes, the bowels should be freely purged during, and for some time after, the cure of an old ulcer; and any symptoms of congestion in the head should receive attention.

For treatment of *Sloughing Ulcers*, see SYPHILIS.

ULCERA'TION: 'that part or effect of an inflammatory process in which the materials of inflamed tissues liquefy or degenerate, are cast off in solution or very minute particles from free surfaces, or, more rarely, are absorbed from the substance of the body.'—Paget, on 'Ulcers.' Generally speaking, however, the name ulcer is not applied to any inflammatory result unless the substance of a tissue deeper than the epithelial is exposed; and when the cast-off particles are only epithelial, the result is termed desquamation, abrasion, or excoriation, though the process may be essentially the same. Ulceration is closely allied to gangrene, the two processes differing in degree rather than in kind. 'When the degenerate or dead substance is cast off in one or more portions visible to the naked eye, the process is usually called gangrene; when the portions are not so visible, or are quite dissolved, it is called ulceration.' The degenerate tissues are always suspended or dissolved in a liquid, termed the 'discharge,' or 'ichor,' which varies in appearance and properties according to the cause and characters of the ulcerative process. From some ulcers, e.g., the primary syphilitic, it is contagious; from many, it appears corrosive, exciting by its acridity inflammatory changes in the tissues with which it is in contact.

ULE, n. *ū'lē:* an elastic gum, the produce of the ule-tree of Mexico; the caoutchouc-yielding trees, *Castillōă elastĭca* and *C. Markhamĭāna.*

ULEABORG, *ô'lĭ-ō-borg:* seaport-town of Russian Finland, cap. of the govt. of U.; on the s. bank of the Ulea, on the e. shore and near the head of the Gulf of Bothnia. It was founded 1605, and the privileges of a port were granted to it 1715. In 1822 it suffered severely from fire. The harbor has of late years become so shallow that vessels are obliged to unload in the roadstead, four m. from the town. The people are engaged in the dock-yards, saw-mills, and breweries of the town. In 1854 an English flotilla burned the government property in the place.—Pop. (1886) 11,578.

ULEMA, n. *ûl'ĭ-ma* [Ar. *Ulema*, the wise or learned men—from *alima*, to know]: class of theological jurists in Turkey, or one of the class, who, as is the case in Mohammedan countries, derive their decisions from the Koran and its commentaries. The U. has many privileges: he pays no taxes, cannot be condemned to death or deprived of his property by any court of law. He can only—eventually—be deposed and banished. The ulemas have to recognize, besides their two immediate superiors (the *kadiasks* or *kadilesks*), only the mufti as their chief authority, while they are the superiors of all the Mollahs (q.v.) in the different provinces. The kadis form the lowest judicial class, and are subject to the mollahs in every respect.

U'LEX: see Furze.

ULEXITE, n. *ū'lĕks-īt:* a fibrous mineral, snow-white in color, consisting of hydrous borate of lime and soda.

ULFILAS, *ŭl'fĭ-las* (*Ulphilas*, *Wulfilas* = little wolf): celebrated translator of the Bible into Gothic: prob. 311–381; b. among the Goths n. of the Danube; of Marcomannian parentage. Consecrated bishop 341; he was severely persecuted by his heathen compatriots; and sought refuge 348, with a great number of new Christian converts, in Lower Mœsia, at the foot of the Hæmus, where he remained 33 years, dispatching his disciples as missionaries to the trans-Danubian Goths. In 388 he went to Constantinople (whither he had gone once before to assist at a council of the Arian party 360); and died there soon afterward. He was one of the chief lights of Arianism (see Arius), in the interest of which he exerted himself with energy. His political influence was great among his Gothic countrymen; and the contemporaneous Greek historians, no less than those writing soon after his death, are unanimous in attributing to him the largest share in the religious and social development of the Gothic population. His greatest work, however—rendering his name famous for all ages—is his Gothic translation of the Bible, a work by which he contrived both to fix the Gothic language and to perpetuate Christianity among the Gothic people. Familiar with Latin, Greek, and Gothic, and accustomed to write in each of them, he undertook to render the whole Bible, except the two warlike books of Samuel and Kings—whose influence he feared for his easily inflammable people—into a language which till then had, as far as we know, never been used for any important literary composition. U. is thus the father of Teutonic literature. Till the 9th c., this sacred and national work accompanied the Goths in all their migrations. But from that period nothing was known of it beyond what was found stated in the ancient ecclesiastical accounts, until the end of the 16th c., when Arnold Mercator discovered in the Abbey of Werden the four Gospels of U. Thence the MS. found its way to Prague, where it remained till 1648, when the Swedes took it as a spoil to Upsal, where it still remains in the Univ. Library, under the name *Codex Argenteus*. In 1818 further remnants of the work—a great portion of the letters of St. Paul—were discovered by A. Mai and Castiglioni, on palimpsests, in a Lombardian monastery, which, added to a few minor fragments, bring the New Test. somewhat near completion. But hardly anything—except a few passages from Ezra and Nehemiah—has survived of the Old Test. The immense importance of this sole Gothic remnant for Teutonic philology cannot be overrated. It is principally through it that the wonderfully fine structure of Gothic—a Germanic dialect of surpassing wealth and purity—has become known.

ULLAGE, n. *ŭl'lāj* [OF. *eullage*, the act of filling up, *eullier*, to fill up to the eye or bung-hole—from *oeil*, eye—from L. *oculus*, eye: Wedgwood, however, derives *eullier* from Prov. *oliar*, to anoint with oil, to fill up a cask, and says that 'in the s. of France, when the flask is nearly full, they add a little *oil* to prevent evaporation, so that *to oil* the flask is equivalent to filling it to the brim']: among *gaugers*, what a cask wants of being full; properly, the quantity required to fill it up.

ULLMANN, *ûl'man*, KARL: theologian: 1796, Mar. 15—1865, Jan. 12; b. Epfenbach, Baden. He studied theol. at Heidelberg and Tübingen; was intimate with Hegel, Daub, Schleiermacher, and Neander; became prof. in Heidelberg Univ. 1821; and in association with Umbreit founded the quarterly review *Theologische Studien und Kritiken* 1828. In 1829–36 he was a prof. in Halle Univ.; 1836 returned to Heidelberg; 1853 became bp. of the state church in Baden; and 1856–60 was pres. of the supreme ecclesiastical council. His teachings and writings had in view a reconciliation between Christianity and modern culture.

ULLMANNITE, n *ŭl'măn-nīt* [after *Ullmann*, a Hessian chemist]: an ore of nickel and antimony, found chiefly in the copper mines of the Westerwald, of a bluish-gray color.

ULLOA, *ôl-yō'â*, FRANCISCO DE: maritime explorer: d. about 1540; b. Spain. He accompanied Cortes to Mexico, and showed great courage and capacity. On the return of Cortes from Spain, he placed U. in command of a ship and 2 caravels, with orders to explore the Pacific coast as far n. as possible. U. suffered shipwreck in the Gulf of California 1539, Aug.; but the following month pursued his exploration with the two caravels. He parted company 1540, Apr. 5, with those of his fellow-voyagers who were in one of the caravels: they reached Santiago in safety. No trustworthy tidings of U. were heard thereafter. The journal of his expedition, written by his clerk, Francisco Preciado, was preserved in the archives of Seville: it was translated into It. by Ramusio, and published in his *Viaggi;* and into Eng. by James Burney for his *History of the Discoveries in the South Sea.*

ULLSWATER, *ŭlz'waw-tėr:* after Windermere, the largest of the English 'Lakes:' between the counties of Cumberland and Westmoreland, 10 m. e. of Keswick; length 9 m.; breadth 1 m. Its scenery has none of the soft beauty of Windermere, but is rugged and grand. One of the chief features of the landscape is the lofty mountain Helvellyn, rising from the s.w. extremity of the lake.

ULM, *ûlm:* second city of Würtemberg, imperial fortress of the first class; on the left bank of the Danube, at the foot of the Swabian Alps; 45 m. s.e. of Stuttgart, 63 m. n.w. of Munich; lat. 49° 54′ n., long. 8° 8′ e. Till the war in 1866, U. was a stronghold of the Germanic Confederation, garrisoned by troops of Würtemberg, Austria, and Bavaria. It was long one of the most important imperial free cities. U. stands at the junction of the Blau with the Danube, which here becomes navigable. Two bridges unite the city with New Ulm, a village on the Bavarian side of the river. The streets are narrow, and the buildings old. The environs are flat. The cathedral, a Prot. church, is remarkable for architectural beauty, and is, next to the cathedral of Cologne, the largest church in Germany: it is 475 ft. in length, 165 in breadth, and 140 in height, the unfinished tower over the main entrance rising 320 ft. Its interior presents an aspect of massive dignity. The building was begun 1377, and finished 1494. There are good schools for the people, a gymnasium, high school, and trade school, a public library, an agricultural soc., and many charitable institutions. Leading industries are weaving linen, cotton, woolen, and mixed fabrics; bleaching; making paper, leather; beer-brewing; ship-building; book-printing; etc. U. is famed for ornamental pipe-bowls, and pastry called Ulmer bread. Around the city are extensive gardens, and asparagus especially is cultivated.

The Romans had a settlement at this important point. In the middle ages, at the height of its prosperity, it had a pop. of 60,000. In 1530 the city accepted the Reformation, and the majority of the people have since been Lutherans. In 1802 U. was attached to Bavaria, and became part of Würtemberg 1810.—Pop. (1871) 26,290; (1890) 36,201.

ULMACEÆ, *ŭl-mā'sē-ē:* natural order of exogenous plants, regarded by some botanists as a sub-order of *Urticaceæ*. They are trees or shrubs, having rough alternate leaves, each leaf with a pair of deciduous stipules. The flowers are small and in loose clusters. The perianth is small, membranous. bell-shaped, irregular; the stamens equal in number to the lobes of the perianth, and inserted into their base; the ovary superior. The fruit is 1–2-celled, nut-like, or compressed and winged. There are about 60 known species, natives of temperate parts of the n. hemisphere. See ELM: NETTLE-TREE: ZELKOUA.

ULMACEOUS, a. *ŭl-mā'shŭs* [L. *ulmus*, an elm]: pertaining to trees of the elm kind, ord. *Ulmācĕæ* (q.v.). **UL-MIC ACID**, *ŭl'mĭk ăs'ĭd*, a vegetable acid exuding spontaneously from the elm, chestnut, oak, etc.; a constituent vegetable mold. **UL'MIN**, n. *-mĭn*, a dark-brown substance which exudes from the bark of the elm and several other trees (see HUMUS). **UL'MOUS**, a. *-mŭs*, applied to those dark substances in which ulmin is found. **UL'MUS**, n. *-mŭs*, a genus of hardy deciduous trees, including the elms.

ULNA, n. *ŭl'nă* [L. *ulna;* Gr. *ōlĕnē*, the elbow, the arm: It. *ulna*]: in *anat.*, the larger of the two bones that form the forearm, or that portion between the wrist and elbow (see ARM). **UL'NAR**, a. *-nėr*, pertaining to the ulna or elbow.

ULODENDRON, n. *ū'lō-dĕn'drŏn* [Gr. *oulē*, a scar; *dendron*, a tree]: genus of fossil plants, which occur chiefly in the roof-shales of the coal-measures, based on trunks or stems often of considerable size, which are covered with small rhomboidal scars, as in Lepidodendron, formed by the bases of leaves or scales; but they differ remarkably from that genus in having a double series of large oval or circular markings, arranged linearly on opposite sides of the trunk. These markings are variously interpreted as representing the cicatrices produced by the bases of cones, by branches, or by leaf-stalks. This genus is, like many of the coal-fossils, extremely enigmatical; and it is difficult to determine its position in the vegetable kingdom: it is probably an ally of Lepidodendron, and that is known to be a vascular cryptogam nearly related to Lycopodium. Seven species are known.

ULOTRICHOUS, a. *ū-lŏt'rĭk-ŭs:* having crisp curly hair.

ULPIANUS, *ŭl-pĭ-ā'nŭs*, DOMITIUS: Roman jurist, of Tyrian extraction, in the early part of the 3d c.: date of birth unknown; d. 228. He appears to have held juridical offices during the reigns of Septimius Severus and Caracalla, of which he was deprived by Elagabalus; but on the accession of Alexander Severus (222), he became the principal adviser of that emperor, who appointed him *scriniorum magister* (keeper of the public records), a *consiliarius* (public assessor), and *præfectus annonæ* (superintendent of the corn-market). He held also, during the reign of Alexander Severus, the important post of prefect of the Prætorian Guards. He was murdered in the palace, in a riot. U. was a voluminous and a valuable writer, being judicious in criticism and lucid in arrangement. In the *Digest* of Justinian there are no fewer than 2,462 excerpts from him, many of considerable length, and altogether forming about a third of the *Digest*. Unfortunately, the originals have almost entirely perished. The principal were: *Ad Edictum* (83 books), *Ad Sabinum* (51 books), *Ad Leges Juliam et Papiam* (20 books). The so-called *Fragmenta* of U. (pub. at Paris by Tilius 1549) consist of 29 titles, whence they are called in the Vatican MS. *Tituli ex Corpore Ulpiani*. The best ed. is Böcking's (Bonn 1836).

ULRIC, *ŭl'rĭk*, ST., Bishop of Augsburg: venerated as one of the Fathers of the German Church: about 890–970; b. Augsburg; son of a Count of Dillingen prominent in mediæval German history. He was educated in the Benedictine monastery of St. Gall (q.v.), in Switzerland; but appears to have been influenced chiefly by a remarkable female recluse, Wiborada, whose cell was in the vicinity of St. Gall. By her counsel he turned to the secular ministry, and received holy orders at Augsburg, where he became bp. 923. He bore an important part in the public affairs of the empire during the reign of Henry I. and his son Otho; and he was the guiding spirit of the several councils in Germany which in the 10th c. labored at the work of reform.—See the anc. *Vita S. Oudalrici Episcopi*, ed. by Mabillon, by the Bollandists, and recently by Dr. Pertz.

ULRICI, *ûl-rē'tsē*, **Hermann**: German philosopher: 1806, Mar. 23—1884, Jan. 11; b. Pförten, in Lower Lusatia. He studied at Halle and Berlin, and, after a brief career as a lawyer, turned to literature and philosophy. In 1834 he was appointed prof. at Halle, where he remained till his death. His first work was his *Geschichte der Hellenischen Dichtkunst* (1835), followed by an ingenious essay on the dramatic art of Shakespeare (*Ueber Shakspeare's dramatische Kunst*, 1839; Eng. transl. 1846). Other works are his *Ueber Princip und Methode der Hegel'schen Philosophie* (1841); *Das Grundprincip der Philosophie* (1845–6); a *System der Logik* (1852); *Gott und die Natur* (1862; 2d ed. 1866), *Gott und der Mensch* (1866), in which U. develops a system of theistic philosophy, in opposition to materialism and in reaction from the anti-ethical pantheistic tendency of Hegelian idealism.

ULSTER, n. *ŭl'stėr* [originally made in *Ulster*, a province of Ireland]: a convenient large loose overcoat, reaching to the feet, made of almost any material (originally of frieze), and worn by both sexes.

ULSTER, *ŭl'stėr* (L. *Ultonia*): province of Ireland (q.v.), the most n. of the four provinces. It is divided into nine counties—Antrim, Armagh, Cavan, Donegal, Down, Fermanagh, Londonderry, Monaghan, and Tyrone (see these entries).

U., as a distinct territory, is of very ancient origin. It formed one of the five ancient divisions of Ireland, and was the seat of the Hy-Nialls or O'Neills, as well as of the lesser septs of O'Donnell, O'Cahan, O'Doherty, Maguire, MacMahon, etc. The n.e. portion, now co. Down, was early overrun by John de Courcy, later by Hugh de Lacy, and was the most permanent seat of English power in the north. The Antrim coast was occupied by a Celtic colony from Scotland and the Isles. In the n. and n.w. parts of the prov. the English made several attempts at a permanent settlement; their success, however, was merely nominal until the reigns of Elizabeth and of James I., when the Plantation of U. was effected, Londonderry (q.v.) being the chief seat of the colony. In U., the Celtic race, owing to the frequent and large infusions of a foreign element, is found in a much smaller proportion than in the three other provinces.—Pop. (1861) 1,910,108, of whom 963,687 were Rom. Catholics; (1871) 1,833,228, of whom 897,230 were Rom. Catholics; (1881) 1,739,542 (Protestants 907,014, Rom. Catholics 831,784); (1891) 1,617,877.

UL'STER BADGE: distinguishing badge of the order of baronets in England—a sinister hand, erect, open, and couped at the wrist gules. It was the armorial ensign of the province of Ulster; and was assigned by James I. to the baronets in respect of the order having been intended for encouragement of plantations in that province.

UL'STER-CUS'TOM, n.: same as Tenant Right (q.v.).

UL'STER KING-AT-ARMS: chief heraldic officer of Ireland, appointed by the crown.—Such an official, called Ireland, existed in the time of Richard II.; but the office fell into abeyance; and the place was filled by appointment, as at present, by Edward VI., 1552. Ulster's officeis in DublinCastle.—See KING-AT-ARMS.

ULTERIOR, a. *ŭl-tē'rĭ-ėr* [L. *ulterior*, further, on the further side: It. *ulteriore*]: more distant or remote; further; beyond something else either expressed or implied; in *geog.*, beyond the frontier.

ULTIMA, a. *ŭl'tĭ-mă* [L. *ultĭmus*, the furthest, the most distant]: most remote; furthest; final; last: N. in *gram.*, the last syllable of a word. UL'TIMATE, a. *-māt*, furthest; most remote; extreme; last of a series; conclusive; in *chem.*, that relates to absolute elements; the last into which a substance can be resolved; the opposite of *proximate*. UL'TIMATELY, ad. *-lĭ*. UL'TIMA'TUM, n. *-mā'tŭm*, the last offer; the final conditions or terms offered, as in diplomatic negotiations; the most favorable terms which a negotiator is prepared to offer, whose rejection will be considered as putting an end to negotiation; any definite final proposition; plu. UL'TIMA'TA, *-tă*, or UL'TIMA'TUMS, *-tŭmz*. ULTIMATE RATIO, in *math.*, that term of a ratio toward which a series tends, and which it does not pass. ULTIMA THULE (see THULE). ULTIMUS HÆRES, n. *ŭl'tĭ-mŭs hē'rēz* [L. *hærēs*, an heir]: the crown, as being the *last heir* to whom lands lapse through absence of proper heirs, or by forfeiture on account of the treason or felony of their original owners.

ULTIMO: usually contracted into ULT.: see under CURT.

ULTRA, a. and prefix, *ŭl'tră* [L. *ultra*, beyond]: beyond; on the other side; extreme; disposed to go beyond what is natural or proper: N. one who is extreme or radical in his opinions. UL'TRAISM, n. *-ĭzm*, the principles of those who advocate extreme measures. ULTRA, n., or UL'TRAIST, n. *-ĭst*, one who advocates extreme measures.

ULTRAMARINE, a. *ŭl'tră-mă-rēn'* [L. *ultra*, beyond; *mărīnus*, marine—from *mărĕ*, the sea]: situated beyond the sea; foreign: N. a blue pigment of great beauty and permanence, prepared from the *lapis lazuli*, the finest specimens being brought from China and Further Asia—hence the name—now artificially prepared. The true U., from its costly nature, was used only by artists; the artificial U. is extensively used by house and ship painters, and is as cheap as it is beautiful. Many artists still insist upon having the true U., which is prepared as follows: fine lapis lazuli is broken into very small pieces, so as to enable the operator to see and pick out the small white portions which occur in it. Of the pieces of pure blue which remain, a pound-weight is then taken, and in a carefully covered crucible is heated to redness, and then thrown into cold water. It is next reduced to an impalpable powder, and mixed with six ounces of finely powdered resin, as light in color as it can be obtained, and two ounces each of spirits of turpentine, bees-wax, and linseed-oil, all previously melted together. When these ingredients are thoroughly worked into a mass, portions of it are taken and kneaded in clean water; as long as any blue color is given out, this is continued, until every portion has been so treated. The blue water is then allowed to rest, and the sediment is collected and washed in water several times. The first washing removes a considerable quantity of dirt and other foreign matters, and is consequently rejected. The second, after being well agitated, is decanted; and from it is obtained the highest quality of the pigment. That which remains usually has two other washings, each of which gives a product of a less value than the operation which preceded it. The product obtained by sediment from each of the waters used is carefully dried, and is then employed either to make cakes for water-color painting, or a mixture for oil-painting, the value being about $5 per ounce.—**ARTIFICIAL ULTRAMARINE.**—The French chemists Clement and Desormes, in studying the curious process of obtaining U. from lapis lazuli by mixing it with resin, etc., were led to an analysis of the coloring matter that suggested to Guimet the idea of composing it artificially. In this he succeeded, and obtained for his discovery the prize of 6,000 francs offered by the *Société d'Encouragement des Arts.* Almost simultaneously, Gmelin in Tübingen gave an analysis and a synthetic process which also succeeded, and artificial U. is now a regular article of manufacture. Chemical skill, however, is necessary to success, and the manufacturers' formulas are very various—differing in the quantities of the ingredients, and the order of mixing them. The German manufacturers are very successful, and some of them have recently produced a fine green U.—The following formula is one of the simplest: 100 parts of finely washed kaolin or porcelain-clay (hydrated silicate of aluminium), 100 of carbonate of sodium, 60 of sulphur, and 12 of charcoal, are mixed, and exposed in a covered crucible to a bright heat for 3½ hours, when a green, unfused residue should be left. This residue, after being well washed and dried, must be mixed with a fifth of its weight of sulphur, and exposed in a thin layer to a gentle heat, so as just to burn off the sulphur. When this is accomplished, more sulphur must be added, and the washing repeated; and so on until the mass acquires a light-blue color, which is usually after the third roasting. In 1872 Fürstenau introduced improvements into the manufacture of U., showing how the blue tint could be produced in one calcination. There is reason to believe, from the experiments of Wilkens, that U. is composed of two portions—one of which is constant in its composition, and is the essential coloring matter, containing about 40 parts of silicic acid, 26 of aluminium, 13 of sulphur, and 21 of sodium, arranged as a mixture of two silicates of aluminium, sodium sulphite, and sodium sulphide—the blue coloring principle being a compound of the latter two; while the other portion differs from the former in resisting the action of hydrochloric acid, and contains a variable amount of sand, clay, oxide of iron, and sulphuric acid. U., if heated in the air, gradually assumes a dull-green tint; and it is quickly decomposed by the action of the mineral acids and chlorine.

The term *Yellow Ultramarine* is sometimes given commercially to chromate of baryta, a yellow insoluble powder used as a pigment. ULTRAMARINE ASHES, the residue of lapis lazuli from which ultramarine has been extracted, producing a color varying from a dull gray to blue.

ULTRAMONTANE, a. *ŭl'tră-mŏn'tān* [L. *ultra*, beyond, *montānus*, pertaining to a mountain—from *mons* or *montem;* a mountain: F. *ultramontain:* It. *oltramontano*]: beyond the mountains—namely, the Alps—meaning their south side when used by the nations north of them: belonging to the Italian or extreme party in the Chh. of Rome, who hold that the pope is superior to general councils, and independent of their decrees; that he is considered to be the source of all jurisdiction in the church; consequently that it is through him, and not directly in virtue of their episcopal office, that the bishops derive their powers of 'jurisdiction,' as distinguished from those of 'order'—opposed to *Gallican* (see ORDERS: EPISCOPAL SYSTEM: GALLICAN CHURCH): N. a person who holds ultramontane opinions. UL'TRAMON'TANISM, n. *-tăn-ĭzm*, the doctrines and tenets of those who hold extreme views as to the pope's rights and supremacy; the usurpation on the part of the church of rights and prerogatives proper to the state; the claim for the church and its ministers of a recognized right of interference in political, social, and worldly matters. UL'TRAMON'TANIST, n. *-tăn-ĭst*, one who holds to ultramontanism.

ULTRAMUNDANE, a. *ŭl'tră-mŭn'dān* [L. *ultra*, beyond; *mundus*, the world]: beyond the world or the limits of our system.

UL'TRA-RED, a.: term applied to the rays beyond the red or low end of the spectrum. From these rays, invisible on account of the slowness of their vibrations, the greatest heating effects are obtained: see SPECTRUM.

UL'TRA-VI'OLET, a.: term applied to the rays beyond the violet or high end of the spectrum. The vibration of these rays is too rapid for vision, but they possess greater chemical activity than any others: see SPECTRUM.

ULTRA VIRES, *ŭl'trá vī'rēz* [L., beyond powers]: in the law of corporations, a phrase meaning beyond the scope of a corporation's legal powers as defined by act of incorporation or by charter. Acts of a corporation that are U. V. are void in law; but should the corporation have received money or other value in consideration of the performance of an act U. V., the said money or value is recoverable in an appropriate action at law. A corporation may suffer deprivation of its charter by judgment of a court, as penalty for committing acts U. V. The general rule of law on the subject, as laid down by an authoritative writer, is that a corporation may lawfully engage in transactions expressly or impliedly authorized by its charter, read in a liberal sense; beyond these powers a corporation cannot legally or validly go.

ULTRONEOUS, a. *ŭl-trō'nĕ-ŭs* [L. *ultrōnĕus*, voluntary—from *ultro*, voluntarily]: of one's own accord; voluntary. ULTRO'NEOUSLY, ad. *-lĭ*.

ULUGH-BEG, *ō'lûg-bĕg*, MIRZA MOHAMMED BEN SHAH ROK, Prince of Samarkand: 1394–1449 (ruled 1447–49); grandson of Timûr (q.v.). He governed Western Turkestan as regent for his father, Shah Rokh, and succeeded to the throne on his father's death. Unfortunately, he was influenced by astrological indications to suspect the loyalty of his eldest son; and the injured prince rebelled, defeated and captured his father, and put him to death, thus fulfilling the prediction. U. is known to posterity as the founder of the observatory at Samarkand, as a patron of astronomers, and as himself a diligent observer. The astronomical tables which bear his name, compiled probably by himself and two assistants, have high reputation for accuracy, considering the time when they were compiled. The astronomical works of U. were in Arabic, afterward transl. into Persian, and thence the chronological portion of them rendered into Latin (Lond. 1650), by Greaves, who followed with a Latin version of the geographical part 1652. An ed. of U.'s catalogue of stars is in *Memoirs of the Royal Astronomical Society*, XIII.

ULULATE, v. *ŭl'ū-lāt* [L. *ululātus*, a howling; *ululo*, I howl]: to howl, as a dog or wolf. UL'ULATING, imp. UL'ULATED, pp. UL'ULA'TION, n. *-lā'shŭn*, a howl, as of a dog. A sound resembling such howling or barking has sometimes been uttered by human beings in a morbid mental state; the act is automatic, and is one of the modifications of hysteria.

UL'VA: see LAVER.

ULVERSTON, *ŭl'vėr-ston:* small but important market-town and seaport of Lancashire, England; 22 m. by railway n.w. of Lancaster; in an extensive agricultural and mining district. It is the centre of commerce for Furness, and for parts of Cumberland and Westmoreland. It contains cotton and paper mills; manufactures linen, ropes, and woolen yarn; and has coasting-trade in iron and copper ores, limestones, grain, and gunpowder.—Pop. (1871) 7,607; (1881) 10,008; (1891) 9,948.

ULYSSES, *ū-lĭs'sēz:* Latin name of one of the heroes of the Trojan war, called Odysseus ('The Angry') in the poems of Homer. Different accounts are given of his parentage; but according to the oldest legend, the Homeric, he was son of Laertes, Prince of Ithaca (one of the Ionian Isles), and of Anticleia, daughter of Autolycus. According to a later legend, his father was the crafty Sisyphus; whence U. is called sometimes, by way of reproach, Sisyphides. He married Penelope (q.v.), by whom he became father of Telemachus. While a youth, he acquired reputation for courage, eloquence, and address. When the expedition against Troy (see TROY) was resolved on, Agamemnon visited Ithaca, and prevailed on U., though with difficulty, to take part in it. Later traditions, or perhaps rather *inventions*, exaggerate his reluctance to leave his home; and represent him as feigning madness—an artifice which did not succeed. Before hostilities broke out, U., with Menelaus and Palamedes, was sent to Troy, to persuade the Trojans to give up Helen and her treasures; but diplomacy having failed, the Greek princes assembled their fleets in the port of Aulis, and sailed for Troy, U. bringing 12 ships. During the siege, U. performed important services for the Greeks. In prudence, ingenuity of resource, and *finesse*, he was foremost of the Hellenic chiefs, while in courage he was inferior to none. After the fall of Troy, the most interesting part of U.'s career begins, and forms the subject of the Homeric poem called the *Odyssey*. Several of his adventures are manifestly of eastern origin, and closely resemble those of *Sindbad the Sailor*. Setting sail for home, his ships were driven by a storm on the coast of Thrace, where he plundered the town of Ismarus, but lost a number of his crew. Having re-embarked, a north wind blew them across the Ægean and the Levant, to the country of the Lotophagi (the 'Lotus-eaters'), on the coasts of Libya, where the companions of U. ate of the wondrous fruit, and wished to rest forever. (Tennyson has a delicious rendering of this episode.) But their leader compelled them to leave the land 'in which it alway seemeth afternoon;' and sailing north again, they touched at the 'island of goats,' where U. left all his ships but one. Thence he proceeded westward, till he reached the 'island of the Cyclopes' (Sicily), where occurred the incident narrated under POLYPHEMUS (q.v.). The island of Æolus, and the city of the Læstrygones (a race of cannibals), whither fortune and the winds next carried the Hellenic chief, are supposed to be only names for particular parts of Sicily. Thence he sailed westward to the island of Ææa, inhabited by the sorceress Circe (q.v.). After a year's sojourn he departed, and, sailing still further west, crossed Oceanus, the 'ocean-stream,' into the country of the Cimmerians (q.v.), where darkness reigns perpetually. Here (following the advice of Circe) he descended into Hades (q.v.), and inquired of the blind seer Teiresias how he might return to his native land. Teiresias disclosed to U. the fact of the implacable enmity of Poseidon (Neptune), on account of his having blinded Polyphemus (who was a son of Poseidon by the nymph Thoosa); but encouraged him with the assurance that he would yet reach Ithaca in safety, if he would not meddle with the herds of Helios (the sun-god) in Thrinacia. U. now retraced his course, and once more visited Circe, the kindly sorceress, who forewarned him of the dangers he would yet have to encounter, and how to act. A west wind blew them past the perilous island of the Sirens (q.v.), to the coasts of Italy. In passing between Scylla and Charybdis, the monster that inhabited the first of these rocks devoured six of U.'s companions. He next came to Thrinacia, which he would fain have passed by; but his crew insisted on landing, and, in spite of their oath, killed some of the cattle of Helios while U. was asleep. The anger of Zeus was kindled. When they had sailed away, a fierce storm arose, and Zeus sent forth a flash of lightning that destroyed the ship. Every one on board was drowned except U. himself, who, after many dangers, reached the island of Ogygia, the abode of the nymph Calypso, with whom he lived eight years. After his departure (which was commanded by Zeus, who had promised to Athene that U. should one day see Ithaca again—the poet always represents him as having a longing after his native isle), Poseidon persecuted him with a storm, and cast him on the shores of Scheria, the island of the Phæacians, in most forlorn condition. He was, however, kindly received by Nausicaa, daughter of King Alcinous; and having revealed his name at a feast, the monarch provided him with a ship to carry him home. U. was asleep when the vessel approached the coast of Ithaca; and the Phæacian sailors who had accompanied him bore the unconscious hero to the shore and left him there. When he awoke, he did not at first recognize where he was; but Athene, appearing, informed him, and of all that had happened to Penelope (q.v.) in his absence. Disguised as a beggar, he repaired to his own court, where he was recognized by his nurse, and, as Homer touchingly describes, by his old dog, Argus. Aided by Telemachus and the swine-herd Eumæus, he took vengeance on the insolent suitors of his wife, all of whom he slew. Homer records nothing more of U.'s history; but he makes Teiresias prophesy, in the 11th book, that the hero would meet a painless death in a happy old age. Another tradition says that he was slain by Telegonus, who was his son by Circe. Later poets, e.g., Virgil and Ovid, represent U. as a much less noble and valiant character than he appears in Homer; his wisdom and subtlety are changed into cunning and deceit; and instead of heroic courage he displays the spirit of a coward.

UM: Kafir or Zulu word signifying river, used as prefix in the names of most of the rivers on the s.e. coast of Africa, from the Great Kei, where the names of Hottentot origin appear to cease, as far to the n.e. as the Sofala coast, where the names Imhambane, Imhampoora, have the same prefix in a corrupted shape. Among the principal rivers on this coast bearing this prefix are the Umgazi, Umbashee, Umtata, Umzimvoobo, and Umzimculu, draining Independent Kaffraria; the Umcomanzi and Umtugela in the colony of Natal; and the Umfolusi, Umhlatoozi, and Umapoota, between Natal and Delagoa Bay. The Hottentot word Kei has the same meaning, and is still preserved in the Kei and Keiskamma rivers, the Keriega, Keisuga, and other streams on the e. coast of the Cape Colony.

UMÂ, *ô'mâ:* in the epic and Purânic mythology of India (see INDIA—*Religion*), one of the principal names of the consort of the god S'iva. Other names by which she is also usually designated are *Durgâ*, *Devi*, *Kâlî*, *Pârvati*, *Bhavânî*, and there are many others less frequent. As a consort of S'iva (q.v.), her name seems to have a double reference: in the earlier Vedic writings (see **Veda: Upanishad**) it typifies the Brahma-science, or the knowledge of what is the nature of Brahman, the Supreme Soul; in the later mythology it appears as the type of destruction—the female energy of S'iva (see **S'âktas**). Though this double character of the consort of S'iva is not always discernible in the myths connected with her special designations, and though at a late period the popular creed viewed her far more as the type of destruction than as that of divine wisdom, yet the great books that treat of her extol her as also the personification of the highest knowledge. Thus, in the *Devîmâhâtmya* she is invoked thus: 'O Devî, thou art the seed of the universe, the highest Mâyâ (q.v.); all this world is bewildered, but, descending on earth, thou art the cause of its final liberation: all the sciences are merely different modes of thyself.' She is invoked similarly in the *Mahâbhârata* (q.v.); and in the *Harivans'a* Vishn'u addresses her as Saraswatî, goddess of eloquence and of sciences, etc.

The myths relating to this goddess, who is worshipped in various parts of India—particularly in Bengal (see **S'âktas**)—are in the great epic poems and Purân'as, in poetical works, such as the *Kumârasambhava* (see **Kâlidâsa**), and in modern popular compositions; but the text-book of her worshippers is the *Devîmâhâtmya*, or 'the majesty of Devî'—considered of especial holiness. In the *Râmâyan'a* (q.v.), she is spoken of as the daughter of Mount Himâlaya, and the sister of the Ganges. The myths recounting her amazing exploits, in the destruction of demons, are complex and innumerable (see **Vishn'u: Purân'a: Kârttikeya: Kansa: etc.**). Annual festivals in various parts of India commemorate some of her victories. The worship of her as *Kâlî* (i.e. the Black), to which the narrative (of her victory over the demons Chan'd'a and Mun'd'a) has given rise, is considered by the Hindus themselves as embodying the principle of *tamas*, or darkness. She is represented as delighting in the slaughter of her foes, though capable of kindlier feelings to her friends. She is, however, styled the Black Goddess of Terror, frequenting cemeteries, and presiding over terrible sprites, fond of bloody sacrifices; and her worship taking place in the darkest night of the month (see **Thug**). With S'iva, she resides on Mount *Kailâsa*, the northern peak of the Himâlaya, or in her own palace on the Vindhya Mountains, where she amuses herself with hunting. See Moor's *Hindu Pantheon*, where notices of festivals and descriptions of images of this goddess are given.—For the myths relating to her, see John Muir's work, *Original Sanskrit Texts*, vol. IV. (Lond. 1863); the *Harivans'a*, transl. by A. Langlois (Paris 1834–5); and the *Mârkan'd'eya Purân'a*, in *Bibliotheca Indica*, ed., with elaborate Preface, by the Rev. K. M. Banerjea (Calcutta 1862).

UMAN, *ô-mân':* town of Russia, govt. of Kiev; 120 m. s. of the town of Kiev, on the Umanka. It is inclosed by earthen ramparts.—Pop. (1880) 15,393; (1885) 15,976.

UMBAGOG, *ŭm'ba-gŏg*, LAKE: picturesque body of water in Oxford co., Me., and in Coos co., N. H., chiefly in the town of Errol, N. H.; 15 m. long, 1 m. to 10 m. wide, with outlet on the w. side into the Androscoggin river. It is reached by the Grand Trunk railroad from Gorham, N. H., and is widely known for its wild scenery and its abundance of fine trout.

UMBALLA, *ŭm-bâl'la*, or AMBALA, *âm-bâ'la:* walled town, cap. of the dist. of U., in the division of U., India; in the Punjab, 120 m. n.n.w. of Delhi. Under the walls of the fort are the British cantonments. Pop. (1881) of city 67,463; (1891) 79,270. Pop. of *division* 1,729,043.

UMBEL, n. *ŭm'bĕl* [L. *umbella*, a sunshade, a parasol—from *umbra*, a shadow: It. *umbella:* F. *ombelle*]: in *bot.*, an inflorescence in which numerous stalked flowers arise from one point, as in the carrot or hemlock (see UMBELLIFERÆ). UM'BELLAR, a. *-lėr*, pertaining to or resembling an umbel. UM'BELLATE, a. *-āt*, or UM'BELLATED, a. bearing umbels; arranged in umbels; in *zool.*, having a number of nearly equal radii, all proceeding from a common centre. UM'BELLULE, n. *-lŭl*, or UM'BELLET, n. *-lĕt*, a little or partial umbel. UM'BELLIF'EROUS, a. *-lĭf'ėr-ŭs* [L. *fero*, I carry]: producing umbels; pertaining to the order of plants which have their flowers arranged in umbels. UMBELLIFER, n. *ŭm-bĕl'lĭ-fėr*, plant of the order UM'BELLIF'ERÆ, *-lĭf'ėr-ē*.

UMBELLIFERÆ, *ŭm-bĕl-lĭf'ėr-ē:* large and important nat. order of exogenous plants (the *Apiaceæ* of Lindley), containing more than 1,000 species, chiefly of the temperate regions of the n. hemisphere. The inflorescence of most plants of this order is peculiarly regular—a number of stalks, radiating from a common centre at the top of the stem or of a branch, each of which bears a flower at its extremity, thus forming an *Umbel* (q.v.). The umbel is often compound, the primary stalks dividing in a radiated manner, and forming *secondary umbels* or *umbellules*. The flowers are generally small, white, rarely yellow, still more rarely red, though frequently tinged with pink at the edges; have a 5-toothed calyx, often obsolete, or nearly so; a corolla of five petals, inserted in the top of the calyx, and alternating with its teeth; five stamens, an inferior germen, and two styles. The fruit is peculiar, and consists of two one-seeded, unopening carpels, rarely fleshy, touching one another on the inner side, and there attached to a little column (the *carpophore*), their common axis. Each carpel has five primary and four secondary longitudinal ridges, more or less distinct; and beneath the separating furrows there are often linear receptacles of essential oil, called *vittæ*. The U. are mostly herbaceous plants, rarely shrubby, with divided or compound, rarely simple, leaves. They generally abound in a resinous secretion, and a volatile oil, from which many of them derive poisonous and medicinal properties, more or less common to all parts of the plant, and often highly developed in the seeds. Acridity is their general characteristic. Some are pleasantly aromatic, others have a powerful and disagreeable smell. In the roots of some, especially when enlarged by cultivation, starch and sugar are secreted, so that they become useful for food, though the peculiar flavor of the essential oil is still retained. The systematic arrangement of the U. has been found difficult by botanists Sprengel, De Candolle, Koch, and others, have devoted much attention to this order. Of esculent-rooted U., the carrot and parsnip are the best-known examples. Skirret, earth-nut, and arracacha are also of some value. The roots of *Anesorhiza Capensis* and *Fœniculum Capense* are used at the Cape of Good Hope as esculents. The roots of *Chærophyllum tuberosum*, or SHAM, are used in the Himalaya. The herbage of *Prangos pabularia* is so bland that it is much used in the temperate parts of the E. Indies for feeding cattle, and is made into hay for winter fodder. It is said, however, to be injurious to horses, though oxen and sheep are rapidly fattened by it. The blanched stems of celery, enlarged by cultivation, are a favorite salad, and those of Alexanders (*Smyrnium olusatrum*) were formerly used in the same way. The candied stalks of eryngo were once much esteemed, and those of angelica are still used. The leaves of parsley, chervil, fennel, etc., are used for flavoring. Lovage (*Levisticum officinale*) is sometimes cultivated as a salad plant. The seeds of anise, caraway, coriander, etc., are used as carminatives. Hemlock, water-hemlock, water-parsnip, fool's parsley, and many others are narcotic poisons—asafetida, galbanum, sagapenum, and opopanax are medicinal products of plants of this order.

UMBER, n. *ŭm'bėr* [L. *umbra*, shade, hue; or from *Umbria*, a district of Italy whence said to have been first obtained]: a pigment of various shades of brown, occurring either naturally in veins and beds, or prepared artificially. Mineral umber is a variety of the iron ore called Hæmatite (q.v.); consists chiefly of oxide of iron, with some oxide of manganese, silica, alumina, and water; is soft and earthy, of a dark-brown color, has a conchoidal fracture, readily imbibes water, and falls to pieces like newly-burnt lime. When gently heated, so as to drive off the water of hydration, it is known as Raw Umber. When roasted, it becomes reddish brown in color, called Burnt Umber, and in that state is also used as a valuable color in house-painting, and in both oil and water-color pictures. It probably came originally from Umbria, in Italy, but is now found in Cyprus. The name *umber* is also applied (1) to a finely pulverized peat or brown-coal from Cologne, used as a pigment, but chiefly employed to adulterate snuff, etc.; (2) to the grayling, a fish of the Salmon family; and (3) to an African bird (*Scopus umbretta*), of the family *Ardeidæ*, allied to the storks, but having a compressed bill with sharp ridge, the tip of the upper mandible hooked, and the nostrils situated in a furrow which extends the whole length of the bill. It is about the size of a crow, with umber-colored plumage, and the male has a large crest on the back of the head. UMBER, v. to darken with umber. UM'BERING, imp. UM'BERED, pp. *-bėrd:* ADJ. darkened as with umber. UM'BERY, a. *-bėr-ĭ*, brown like umber.

UMBILICAL, a. *ŭm-bĭl'ĭ-kăl* or *ŭm'bĭl-ĭ'kăl*, or Umbil'ic, a. *-ĭk* [L. *umbilicus*, akin to Gr. *omphălos*, the navel]: of or pertaining to the navel; of the shape of the navel. Umbil'ical cord, in *anat.*, a cord-like substance which extends from the placenta to the navel of the fetus. Umbil'icate, a. *-ĭ-kāt*, or Umbil'icated, a. [L. *umbilicātus*, navel-shaped]: having a navel, or resembling one; in *bot.*, fixed to a stalk by a point in the centre; depressed in the middle like a navel. Umbilicus, n. *ŭm'bĭl-ĭ'kŭs*, the central spot of the abdomen, marked by a depression; the navel; in *bot.*, the scar by which a seed is attached to the placenta, more commonly called the hilum: in *conch.*, the conical depression at the base of a univalve shell.

UMBIL'ICAL CORD: the navel-string or bond of communication between the fetus (which it enters at the umbilicus, or navel) and the placenta; which is attached to the inner surface of the maternal womb. It consists of the umbilical vein lying in the centre, and the two umbilical arteries winding from left to right round the vein. Contrary to the usual course, the vein conveys arterial blood to the fetus, and the arteries return venous blood to the placenta. These vessels are imbedded in a yellow gelatinous matter, known from its first describer (1659) as Wharton's gelatine. Nervous filaments have been traced into the cord; but the presence of lymphatics is doubtful. The whole is invested by a membrane (the Amnion—q.v.), and its ordinary length is about 20 in. As soon as a child is born, and its respiration fairly established, the umbilical cord is tied, and divided near the navel, which spontaneously closes, the fragment of attached cord dying away. See Fœtus: Placenta.

UMBIL'ICAL CORD, in Botany: connecting link between the placenta of the ovary and the ovule, through which pass the vessels which nourish the ovule till it ripens into the seed. In some plants the ovules are so closely connected with the placenta that no U. C. can be said to exist: in others it is of considerable length.

UMBIL'ICAL HER'NIA: protrusion of intestine at the navel; most common shortly after birth; but sometimes in women who have been frequently pregnant. If reducible, and the patient an infant, the ordinary treatment is to place the convex surface of an ivory hemisphere on the navel, and to retain it with strips of adhesive plaster or a bandage. Hernia in an infant, with or without treatment, is usually recovered from. In an adult, the ideal treatment, as for all hernias, is a radical surgical operation, the relaxed abdominal wall being sewed so that recurrence is unlikely. A bandage should, however, be worn for weeks or months. Operation becomes especially desirable when the hernia is irreducible, and imperative if the bowel is strangulated. If operation is not advisable on account of cardiac or other disease, and the hernia is not strangulated, a truss may be worn.

UMBLES, n. plu. *ŭm'blz* [L. *umbilīcus*, the navel (see Numbles)]; the entrails of a deer. **Umble-pie**: see under Humbles.

UMBO, n. *ŭm'bō* [L. *umbo*, the boss of a shield]: the boss or protuberant part of a shield: in *bot.*, a conical protuberance on a surface: in *conch.*, the knob-like point of a bivalve shell, situated immediately above the hinge. **UMBONES**, n. plu. *ŭm'bō-nēz*. **UM'BONATE**, a. *-nāt*, or **UMBONATED**, a. *-nā-tĕd*, knobbed in the centre; round, with a projecting point in the centre like the boss of an anc. shield. **UMBONULATE**, a. *ŭm-bŏn'ū-lāt*, in *bot.*, having a termination like a small boss.

UMBRA, n. *ŭm'bră* [L. *umbra*, a shadow]: in *astron.*, the dark cone projected from a planet or satellite on the side opposite the sun.

UMBRAGE, n. *ŭm'brāj* [F. *ombrage*, a shade, jealousy, suspicion—from L. *umbraticus*, pertaining to shade or retirement—from *umbra*, a shade, a shadow]: shade or a shade; a screen of trees or foliage; hence, a feeling of being overshadowed; notion or suspicion of injury; offense. **UMBRAGEOUS**, a. *ŭm-brā'jŭs*, forming or yielding shade; shady; in *OE.*, suspicious; feeling umbrage. **UMBRA'GEOUSNESS**, n. *-nĕs*, the state or quality of being umbrageous.

UMBRAL, a. *ŭm'bral* [L. *umbra*]: in *geol.*, shady; term applied by Prof. H. D. Rogers to the 14th series of the Appalachian strata, corresponding in period to the Carboniferous limestone of Europe; maximum thickness in Penn. and Va., about 3,000 ft.; in the western states, about 1,000 feet.

UMBRELLA, n. *ŭm-brĕl'lă* [It. *ombrella*, an umbrella—from It. *ombra;* L. *umbra*, a shade: F. *ombrelle*, a sunshade]: a portable screen to be held above the head to shade from the sun, or to protect from rain, and which may be opened and shut at pleasure.—The *Umbrella* is of great antiquity. In the sculptures of Egypt, Nineveh, and Persepolis, umbrellas are frequently figured, and appear to have been, as now in the East, an attribute of royalty. In Greece and Rome its use was more general, and was probably continued in Italy from ancient times. At the beginning of the 17th c. the U. seems to have been little, if at all, known in England. Then it came into use as a luxurious sunshade; and in the reign of Queen Anne it had become common in London as a screen from the rain, but only for women. The first man who had the courage to carry an umbrella in the streets of London was Jonas Hanway, founder of the Magdalene Hospital, who had just returned from Persia, and was in poor health. Its use, however, was long regarded as a sign of infirmity or effeminacy. At first all umbrellas were imported—chiefly from India, Spain, and France; but now the manufacture of umbrellas has reached enormous proportions, both in Great Britain and in the United States. The umbrellas of China and Japan are of oiled paper, with bamboo ribs, stretchers, and handles.

UMBRELLA BIRD: South Amer. bird (*Cephalopterus ornatus*), about the size of a crow, with deep black plumage. The head is adorned with a large spreading crest with white shafts and glossy blue plumes, capable of being erected at will.

UMBREL'LA-TREE: magnolia found along the Alleghany Mountains from Penn. to Ky., frequently grown for ornament. It is 30–40 ft. high, and has leaves 18–20 in. long and 8–10 in. wide, and white flowers 4–5 in. deep. Its name is derived from the clustering of the leaves at the ends of the flowering shoots. Foreign varieties are the ear-leafed, Guinea, and Queensland umbrella-trees.

UMBRIA, *ŭm'brĭ-a:* ancient division of Italy, w. of Etruria, and n. of the country of the Sabines, and usually described as extending from the Tiber e. to the Adriatic. Tradition leads us to believe that at one time Umbrian territory extended from sea to sea, embracing much, if not all, of the country subsequently occupied by the Etruscans; but when the Umbrians first appear in history as a distinct people, we find them restricted to the ridges of the Apennines, the lowland region bordering on the Adriatic from the Æsis (mod. *Esino*) to the Rubicon being held by a race of Gallic invaders known as the Senones. The most notable towns of U. were Narnia, Interamna, Acriculum, Spoletium, Mevania, Fulginium, Assisium Tifernum, Nuceria, Camerinum, Sentinum, Urbinum, Sena Gallica, Fanum Fortunæ, and Ariminum.

The Umbrians were said by Pliny to be the oldest people of Italy—i.e., of Italian stock; and modern researches into their language (of which we possess one important memorial in the tables of Iguvium: see EUGUBINE TABLES) have demonstrated that they spoke a tongue closely allied to the Oscan (see OSCI), and the oldest of the Italian dialects.

The Umbrians make their first authentic appearance in the wars between the Romans and the Etruscans, B.C. 4th c. They seem to have had no political organization or unity, for some of their tribes took part with the Romans, and others—probably the majority—with the Etruscans. They were subjugated with the latter people; and we read nothing of them again until the third Samnite war, when, in conjunction with the Etruscans and Gauls, they joined the Samnites in their last gallant struggle against the supremacy of Rome (q.v.), but were utterly vanquished in the great battle of Sentinum, B.C. 295. The establishment of Roman colonies in the *Gallicus Ager*, or territory of the Senonian Gauls, seems to have completely overawed, and at last to have Romanized them. They stood faithfully by Rome in the dark years of the Hannibalic war, and were among the first to furnish Scipio with volunteers for invasion of Africa. They obtained the Roman franchise B.C. 90, and thenceforth disappear from history as a distinct people.

UMBRIAN, a. *ŭm'brĭ-ăn:* of or pertaining to *Umbria*, a district of central Italy, possessed by the Umbri at an early period B.C. UM'BRIANS, n. plu. the inhabitants of Umbria.

UMBRIERE, n. *ŭm'brĭ-ār* [Norm. F.—from OF. *umbre* —from L. *umbra*, a shade]: in *OE.*, the visor of a helmet: also UMBRERE.

UMBRIFEROUS, a. *ŭm-brĭf'ėr-ŭs* [L. *umbra*, a shadow, *fero*, I bear]: casting or making a shade. **UMBRIF'EROUSLY**, ad. *-lĭ*.

UMLAUT, n. *ôm'lowt* [Ger.—from prefix *um-*, indicating alteration; *laut*, sound]: in *philol.*, a kind of assimilation of sounds; the change of the vowel in one syllable through the influence of one of the vowels *a*, *i*, *u*, in the syllable immediately following. It is a common feature in several Teutonic tongues. In German, umlaut is seen in the frequent change of the vowels *a*, *o*, *u*, to *ä*, *ö*, *ü*. In Anglo Saxon it was also common. The change caused by *a* is called *a*-umlaut, and so of the other vowels.

UMPIRE, n. *ŭm'pīr* [OE. *nowmpere*, an arbiter: OF. *nompair*, uneven or odd in number: L. *non par*, not equal]: a third person chosen to decide a controversy left to arbitration, when the two arbitrators disagree, the decision or award of the umpire being final and binding on all parties concerned; a judge; a referee: V. to act as umpire. **UMPIRAGE**, n. *ŭm'pīr-āj*, the power, right, or authority of an umpire to decide; the decision of an umpire. **UM'PIRESHIP**, n. the office of an umpire—**SYN**. of 'umpire, n.': judge; arbitrator; referee; arbiter.

UMPQUA, *ŭmp'kwaw*, **RIVER**: important water-course in Douglas co., Or.; rising by two forks in the Cascade Mountains, flowing n.w. through a fertile, mountain-skirted valley, and emptying into the Pacific Ocean about 20 m. n. of Empire City. The forks unite 8 m. below Roseburg, and the valley is noted for its wool products and placer gold-mining.

UMQUHILE, a. *ŭm'kwīl* [AS. *hwilum*, for a time, once]: in *Scot.*, late; former; deceased: **AD**. some time ago; formerly; the same word as **WHILOM**, *hwī'lŏm*.

UMROHAH, *ŭm-rō'â:* town of Brit. India, dist. of Moradabad, N.W. Provinces; 80 m. e.n.e. of Delhi.—Pop. (1881) 36,145.

UN-, *ŭn* [AS. *un;* Ger. *un*, a privative or negative particle]: an inseparable prefix signifying (1) 'not,' the opposite of; and (2) 'back,' 'reversal,' 'annulment': *un*, signifying 'not,' may be used before almost any adjective, as in *un*fruitful, '*not* fruitful,' the opposite of fruitful; before nouns derived from adjectives, as in *un*fruitfulness, the opposite of fruitfulness; and before adverbs, as in *un*fruitfully: *un*, signifying 'back,' used before (transitive) verbs, denotes reversal of the action or annulment of the act, implied in the verb to which it is prefixed, as to *un*do, *un*bind, *un*say, etc. Before verbs derived from nouns it signifies privation or removal, as to *un*frock, to deprive of a frock; *un*dress, to take off dress. *Note.*—Under **UN**, those words only are given which are in most general use; when a word is not found, turn to the word less the prefix *un*, or to the primary word, for further explanations and the roots. *Un* is equivalent to the Latin prefix *in* when it signifies *not.* In the use of *un* or *in* before adjectives, usage has greatly varied. As to when it is proper, according to the best usage, to write *un* or *in*, the dictionary should be consulted. In many cases both *in* and *un* are in good use as prefixes for the same word, and are used indifferently, some writers preferring *un* and others *in*.

UNABASED, a. *ŭn'ă-bāst':* not abased; not humbled.

UNABASHED,, a. *ŭn'ă-băsht':* not confused with shame or by modesty.

UNABATED, a. *ŭn'ă-bā'tĕd:* not diminished in strength or violence. **UN'ABA'TING**, a. not diminishing in strength or violence.

UNABBREVIATED, a. *ŭn'ăb-brē'vĭ-ā-tĕd:* not abbreviated or shortened; uncurtailed.

UNABIDING, a. *ŭn'ă-bī'dĭng:* not abiding or permanent. **UN'ABI'DINGLY**, ad. **UN'ABI'DINGNESS**, n.

UNABLE, a. *ŭn-ā'bl:* not able; weak; without adequate knowledge or skill; incapable.

UNABOLISHED, a. *ŭn'ă-bŏl'ĭsht:* not abolished; remaining in force.

UNABRIDGED, a. *ŭn'ă-brĭjd':* not shortened.

UNABROGATED, a. *ŭn-ăb'rō-gā-tĕd:* not annulled.

UNABSOLVED, a. *ŭn'ăb-zŏlvd';* not acquitted or forgiven.

UNABSORBED, a. *ŭn'ăb-sŏrbd':* not imbibed or absorbed.

UNACCENTED, a. *ŭn'ăk-sĕnt'ĕd:* having no accent or force of the voice upon, as a syllable.

UNACCEPTABLE, a. *ŭn'ăk-sĕpt'ă-bl:* not acceptable; not pleasing. **UN'ACCEPT'ED**, a. not accepted; rejected.

UNACCOMMODATING, a. *ŭn'ăk-kŏm'mō-dā-tĭng:* not ready to oblige: uncompliant. **UN'ACCOM'MODATED**, a. unfurnished with external conveniences.

UNACCOMPANIED, n. *ŭn'ăk-kŭm'păn-ĭd:* not attended; having no appendages.

UNACCOMPLISHED, a. *ŭn'ăk-kŏm'plĭsht:* not accomplished; not finished; incomplete.

UNACCOUNTABLE, a. *ŭn'ăk-kownt'ă-bl:* not to be accounted for; inexplicable; irresponsible. **UN'ACCOUNT'ABLY**, ad. *-blĭ.* **UN'ACCOUNT'ABIL'ITY**, n. state of being unaccountable.

UNACCREDITED, a. *ŭn'ăk-krĕd'ĭt-ĕd:* not accredited; not received; not authorized.

UNACCUSTOMED, a. *ŭn'ăk-kŭs'tŭmd:* not accustomed; not habituated; new; not usual.

UNACHIEVABLE, a. *ŭn'ă-chēv'ă-bl:* that cannot be done. **UN'ACHIEVED'**, a. not accomplished or performed.

UNACHING, a. *ŭn āk'ĭng:* not feeling or causing pain.

UNACKNOWLEDGED, n. *ŭn'ăk-nŏl'ĕjd:* not recognized; not owned; not avowed.

UNACQUAINTED, a. *ŭn'ăk-kwānt'ĕd:* not having familiar knowledge; unusual. **UN'ACQUAINT'ANCE**, n. *-ăns,* ignorance; want of knowledge.

UNACQUIRED, a. *ŭn'ăk-kwīrd':* not gained or acquired,

UNACQUITTED, a. *ŭn'ăk-kwĭt'tĕd:* not acquitted.

UNACTED, a. *ŭn-ăkt'ĕd:* not put into execution; not acted, as a drama.

UNACTIVE, a. *ŭn-ăk'tĭv:* not brisk or lively; having no employment: *inactive* is the general spelling.

UNACTUATED, a. *ŭn-ăk'tū-ā-tĕd:* not moved.

UNADAPTED, a. *ŭn'ă-dăpt'ĕd:* not suited.

UNADDICTED, a. *ŭn'ăd-dĭkt'ĕd:* not given or devoted.

UNADDRESSED, a. *ŭn'ăd-drĕst':* not addressed.

UNADJUSTED, a. *ŭn'ăd-jŭst'ĕd:* not settled; not regulated; not liquidated.

UNADMIRED, a. *ŭn'ăd-mīrd':* not regarded with admiration.

UNADMONISHED, a. *ŭn'ăd-mŏn'isht:* not cautioned.

UNADOPTED, a. *ŭn'ă-dŏpt'ĕd:* not received as one's own; not adopted or used.

UNADORED, a. *ŭn'ă-dōrd':* not worshipped.

UNADORNED, a. *ŭn'ă-dawrnd':* not adorned or decorated; not embellished.

UNADULTERATE, a. *ŭn'ă-dŭl'tĕr-āt*, or **Un'adul'terated**, a. *-dŭl'tĕr-ā-tĕd:* genuine; pure; not spoiled by admixture or contact.

UNADVENTUROUS, a. *ŭn'ăd-vĕn'tū-rŭs:* not adventurous.

UNADVISABLE, a. *ŭn'ăd-vī'ză-bl:* not advisable; not expedient. **Un'advised'**, a. not prudent; not discreet; done without due thought; rash. **Un'advi'sedly**, ad. **Un'advi'sedness**, n. imprudence; rashness.

UNAFFECTED, a. *ŭn'ăf-fĕkt'd:* plain; natural; not labored or artificial; sincere; not moved; not influenced. **Un'affect'edly**, ad. **Un'affect'edness**, n. the state of being unaffected. **Un'affect'ing**, a. not adapted to move the passions. **Un'affec'tionate**, a. *-shŭn-āt*, wanting affection.

UNAFFIRMED, a. *ŭn'ăf-fĕrmd':* not affirmed.

UNAFFLICTED, a. *ŭn'ăf-flĭkt'ĕd:* free from trouble or distress.

UNAFFRIGHTED, a. *ŭn'ăf-frīt'ĕd:* not frightened or terrified.

UNAGITATED, a. *ŭn-ăj'ĭ-tā-tĕd:* not disturbed; calm.

UNAGREEABLE, a. *ŭn'ă-grē'ă-bl:* in *OE.*, inconsistent; unsuitable.

UNAIDED, a. *ŭn-ād'ĕd:* not assisted. **Unaid'able**, a. *-ă-bl*, incapable of being aided.

UNAIMING, a. *ŭn-ām'ĭng:* having no particular aim or direction.

UNAKA MOUNTAINS, *ū'na-ka:* s.w. extremity of the Great Smoky Mountains, between Tenn. and N. C.; they extend from the Tennessee river to the Hiawassee river.

UNALARMED, a. *ŭn'ă-lârmd':* not disturbed with fear **Un'alarm'ing**, a. not alarming.

UNALASKA, *ô-na-lâs'ka*, formerly written **Unalashka** and **Oonalash'ka**: island in the North Pacific, belonging to the Fox group of the Aleutian Islands; lat. 55° 52' n., long. 166° 32' w. It is 75 m. long, and in some parts 20 m. broad, and has a rugged mountainous surface. It is an important fur-trading centre, and is a point of call for whalers, etc., for all necessary supplies except wood.—Pop. (1890) 900.

UNALLAYED, a. *ŭn'ăl-lād':* not appeased or quieted.

UNALLEVIATED, a. *ŭn'ăl-lē'vĭ-ā-tĕd:* not mitigated.

UNALLIED, a. *ŭn'ăl-līd':* having no connection as by nature, marriage, or treaty; having no powerful relation.

UNALLOYED, a. *ŭn'ăl-loyd':* not reduced or debased by foreign admixture; unmixed.

UNALTERABLE, a. *ŭn-awl'tėr-ă-bl:* incapable of alteration; unchangeable; immutable. **Unal'tered**, a. not altered or changed. **Unal'terably**, ad. **Unal'terableness**, or **Unalterabil'ity**, n. state of being unalterable.

UNAMAZED, a. *ŭn'ă-māzd':* not astonished; free from astonishment.

UNAMBIGUOUS, a. *ŭn'ăm-bĭg'ū-ŭs:* not obscure; plain; clear; not of doubtful meaning. **Un'ambig'uously**, ad. **Un'ambig'uousness**, n. the state or quality of being unambiguous.

UNAMBITIOUS, a. *ŭn'ăm-bĭsh'ŭs:* free from ambition; not aspiring; not ostentatious. **Un'ambi'tiously**, ad.

UNAMENABLE, a. *ŭn'ă-mē'nă-bl:* not amenable or responsible.

UNAMIABLE, a. *ŭn-ā'mĭ-ă-bl:* not adapted to gain affection. **Una'miableness**, n. the state or quality of being unamiable; repulsiveness.

UNANCHORED, a. *ŭn-ăng'kėrd:* not anchored.

UNANELED, a. *ŭn'ă-nēld'* [see **Anele**]: in *OE.*, not having received extreme unction.

UNANIMATED, a. *ŭn-ăn'ĭ-mā-tĕd:* not possessed of life; dull; not enlivened.

UNANIMOUS, a. *ū-năn'ĭ-mŭs* [L. *unus*, one; *animus*, mind: F. *unanime*, unanimous]: being of one mind; agreeing in opinion. **Unan'imously**, ad. *-lĭ*. **Unanimity**, n. *ū'nă-nĭm'ĭ-tĭ*, or **Unan'imousness**, n. *-nĕs*, state of being unanimous; agreement in opinion or determination.

UNANNEALED, a. *ŭn'ăn-nēld':* not tempered by heat; suddenly cooled.

UNANNEXED, a. *ŭn'ăn-nĕkst':* not annexed or joined.

UNANNOUNCED, a. *ŭn'ăn-nownst':* not announced.

UNANOINTED, a. *ŭn'ă-noynt'ĕd:* not anointed; not having received extreme unction.

UNANSWERABLE, a. *ŭn-ăn'sėr-ă-bl:* that cannot be refuted or answered satisfactorily. **Unan'swerably**, ad. **Unan'swerableness**, n., or **Unan'swerabil'ity**, n. *-bĭl'ĭ-tĭ*, the state or quality of being unanswerable. **Unan'swered**, a. not answered; not confuted; not opposed by a reply.

UNAPOSTOLIC, a. *ŭn-ăp′ŏs-tŏl′ĭk*, or Unap′ostol′ical, a. *-ĭ-kăl:* not agreeable to apostolic usage; without apostolic authority.

UNAPPALLED, a. *ŭn′ăp-pawld′:* not daunted.

UNAPPARELLED, a. *ŭn′ăp-păr′ĕld:* not dressed; not clothed.

UNAPPARENT, a. *ŭn′ăp-pâr′ĕnt:* not apparent; obscure; not visible.

UNAPPEALABLE, a. *ŭn′ăp-pēl′ă-bl:* admitting no appeal.

UNAPPEASABLE, a. *ŭn′ăp-pēz′ă-bl:* not to be pacified; implacable. Un′appeased′, a. not pacified.

UNAPPLAUDED, a. *ŭn′ăp-plawd′ĕd:* not applauded; not praised.

UNAPPLIED, a. *ŭn′ăp-plīd′:* not applied; not used according to the intention.

UNAPPRECIATED, a. *ŭn′ăp-prē′shĭ-ā-tĕd:* not duly estimated or valued.

UNAPPREHENSIVE, a. *ŭn′ăp-prĕ-hĕn′sĭv:* not suspecting; unsuspicious.

UNAPPRISED, a. *ŭn′ăp-prīzd′:* not previously informed.

UNAPPROACHABLE, a. *ŭn′ăp-prōch′ă-bl:* that cannot be approached; inaccessible. Un′approach′ably, ad. Un′approached′, a. not to be approached; inaccessible.

UNAPPROPRIATED, a. *ŭn′ăp-prō′prĭ-ā-tĕd:* not applied to any specific object; not granted or given, as to a person or company.

UNAPPROVED, a. *ŭn′ăp-prôvd′:* not having received approbation; not approved. Un′appro′ving, a. not approving.

UNAPT, a. *ŭn-ăpt′:* not apt; not qualified; not suitable; dull; unready. Unapt′ly, ad. Unapt′ness, n. the state of being dull or unready to learn; unfitness; want of apprehension; unreadiness.

UNARGUED, a. *ŭn-âr′gūd:* not discussed; in *OE.*, not censured.

UNARM, v. *ŭn-ârm′:* to strip of armor; to deprive of arms. Unarmed, a. *ŭn-ârmd′*, without arms; not equipped; in *bot.*, not furnished with scales or prickles, or the like.

UNARRANGED, a. *ŭn′ăr-rānjd′:* not arranged or disposed in order.

UNARRAYED, a. *ŭn′ăr-rād′:* not dressed; not disposed in order.

UNARRESTED, a. *ŭn′ăr-rĕst′ĕd:* not stopped; not apprehended.

UNARTICULATED, a. *ŭn′âr-tĭk′ū-lā-tĕd:* not articulated or distinctly pronounced.

UNASCERTAINABLE, a. *ŭn-ăs′sėr-tān′ă-bl:* that cannot be ascertained or reduced to certainty. Unas′certained′, a. not known with certainty.

UNASHAMED, a. *ŭn′ă-shāmd′:* not ashamed.

UNASKED, a. *ŭn ăskt':* not sought by entreaty; unsolicited.

UNASPIRING, a. *ŭn'ăs-pī'rĭng:* not aspiring or ambitious. UN'ASPI'RINGLY, ad.

UNASSAILABLE, a. *ŭn'ăs-sāl'ă-bl:* that cannot be assailed or attacked. UN'ASSAILED', a. not attacked.

UNASSAULTED, a. *ŭn'ăs-sawlt'ĕd:* not attacked with violence.

UNASSAYED, a. *ŭn'ăs-sād':* not attempted; not tried or tested—applied to metals.

UNASSERTED, a. *ŭn'ăs-sĕrt'ĕd:* not affirmed or vindicated.

UNASSESSED, a. *ŭn'ăs-sĕst':* not assessed or rated.

UNASSIGNABLE, a. *ŭn'ăs-sīn'ă-bl:* that cannot be transferred by assignment or indorsement. UN'ASSIGNED', a. not transferred; not declared.

UNASSIMILATED, a. *ŭn'ăs-sĭm'ĭ-lā-tĕd:* not made to resemble; not united with or actually made a part; not made into the fluids or solids of the body, as food.

UNASSISTED, a. *ŭn'ăs-sĭst'ĕd:* not aided or helped. UN'ASSIST'ING, a. giving no help.

UNASSOCIATED, a. *ŭn'ăs-sō'shĭ-ā-tĕd:* not united with or in company with.

UNASSUMED, a. *ŭn'ăs-sūmd':* not assumed. UN'ASSU'MING, a. not bold or forward; modest; not arrogant.

UNASSURED, a. *ŭn'ă-shôrd':* not bold or confident; not insured.

UNATONED, a. *ŭn'ă-tōnd':* not expiated. UN'ATO'NABLE, a. not to be appeased; in *OE.*, not reconcilable.

UNATTACHED, a. *ŭn'ăt-tăcht':* not arrested; not closely adhering; not united by affection; having no fixed interest; not attached to any particular regiment, as an army officer.

UNATTACKED, a. *ŭn'ăt-tăkt':* not attacked or assaulted

UNATTAINABLE, a. *ŭn'ăt-tān'ă-bl:* not to be obtained; being out of reach. UN'ATTAINED', a. not attained or reached.

UNATTEMPTED, a. *ŭn'ăt-tĕm'tĕd:* not tried or essayed.

UNATTENDED, a. *ŭn'ăt-tĕnd'ĕd:* not attended; not accompanied; without attendants.

UNATTESTED, a. *ŭn'ăt-tĕst'ĕd:* not attested; without witness.

UNATTIRED, a. *ŭn'ăt-tīrd':* not attired or adorned.

UNATTRACTED, a. *ŭn'ăt-trăk'tĕd:* not affected or influenced, as by attraction. UN'ATTRAC'TIVE, a. not attractive or prepossessing.

UNAUTHENTICATED, a. *ŭn'aw-thĕn'tĭ-kā-tĕd:* not proved to be genuine; not made certain by authority.

UNAUTHORIZED, a. *ŭn-aw'thŏr-īzd:* not warranted by proper authority.

UNAVAILABLE, a. *ŭn′ă-vāl′ă-bl:* not available; not having sufficient power to produce the intended effect; useless; ineffectual; vain. UN′AVAIL′ING, a. not having the desired effect; useless.

UNAVENGED, a. *ŭn′ă-vĕnjd′:* not avenged; not having obtained satisfaction; not punished.

UNAVERTED, a. *ŭn′ă-vėrt′ĕd:* not turned away.

UNA VOCE, phrase, *ū′nâ vō′sē* [L.]: with one voice; unanimously.

UNAVOIDABLE, a. *ŭn′ă-voyd′ă-bl:* that cannot be shunned; certain; inevitable. UN′AVOID′ABLY, ad. UN′AVOID′ABLENESS, n.

UNAVOWED, a. *ŭn′ă-vowd′:* not acknowledged.

UNAWAKED, a. *ŭn′ă-wākt′*, or UN′AWAK′ENED, a. *-wāk′nd:* not roused from sleep; not roused from spiritual or mental slumber or torpidity.

UNAWARE, a. *ŭn′ă-wār′:* not aware; inattentive; unexpectant. UN′AWARE′, or UN′AWARES′, ad. *-wārz′*, suddenly; unexpectedly; without thought; without premeditation.

UNAWED, a. *ŭn-awd′:* not restrained by fear.

UNBACKED, a. *ŭn-băkt′:* that has never been mounted or taught to bear a rider, as a horse; unsupported.

UNBAFFLED, a. *ŭn-băf′fld:* not defeated or confounded.

UNBAKED, a. *ŭn-bākt′:* not baked or made ready for food.

UNBALANCED, a. *ŭn-băl′ănst:* not poised; not adjusted; not settled; not brought to an equality, as the credit and debtor side of an account.

UNBALLASTED, a. *ŭn-băl′lăs-tĕd:* not kept steady by ballast; unsteady; without ballast.

UNBANDAGED, a. *ŭn-băn′dājd:* not wrapped with a bandage.

UNBANDED, a. *ŭn-bănd′ĕd:* lacking a band or string.

UNBAPTIZED, a. *ŭn′băp-tīzd′:* not having received the sacrament of baptism.

UNBAR, v. *ŭn-bâr′:* to unfasten; to open by removing bolts or bars.

UNBARBED, a. *ŭn-bârbd′* [L. *barba*, a beard]: in *OE.*, not shaven; also, bare.

UNBARKED, a. *ŭn-bârkt′:* stripped of the bark; decorticated: *barked* is the word now used for *unbarked*.

UNBASHFUL, a. *ŭn-băsh′fŭl:* not bashful; impudent; shameless.

UNBATED, a. *ŭn-bā′tĕd:* in *OE.*, not blunted; not repressed.

UNBATTERED, a. *ŭn-băt′tėrd:* not injured by blows.

UNBEARABLE, a. *ŭn-bār′ă-bl:* not bearable; that cannot be borne or endured.

UNBEATEN, a. *ŭn-bēt′n:* not beaten; untrodden.

UNBECOMING, a. *ŭn'bĕ-kŭm'ĭng:* unsuitable; improper for the person or character; indecent. **Un'becom'ingly**, ad. **Un'becom'ingness**, n. *-nĕs.*

UNBEFITTING, a. *ŭn'bĕ-fĭt'tĭng:* unsuitable; unbecoming.

UNBEFRIENDED, a. *ŭn'bĕ-frĕnd'ĕd:* not supported by friends.

UNBEGOT, a. *ŭn'bĕ-gŏt',* or **Un'begot'ten**, a. *-gŏt'tn:* not generated; eternal; not yet generated.

UNBEGUN, a. *ŭn'bĕ-gŭn':* not yet begun.

UNBEHELD, a. *ŭn'bĕ-hĕld':* unseen; not beheld.

UNBELIEF, n. *ŭn'bĕ-lēf':* the withholding of belief; skepticism; infidelity; disbelief of divine revelation. **Un'believ'er**, n. *-lēv'ĕr,* an incredulous person; an infidel; one who does not believe in a divine revelation. **Un'believ'ing**, a. incredulous; infidel; not acknowledging a divine revelation. **Un'believed'**, a. discredited.—**Syn.** of 'unbeliever': infidel; deist; theist; freethinker; skeptic.

UNBELOVED, a. *ŭn'bĕ-lŭvd':* not loved.

UNBEND, v. *ŭn-bĕnd':* to become unbent; to relax; to make straight; to set at ease for a time; to become less rigid in manner; among *seamen,* to take the sails from the yards and stays; to cast loose, as a cable from an anchor; to untie one rope from another. **Unbend'ing**, imp. relaxing from a strain: **Adj.** unyielding; resolute; inflexible. **Unbent'**, pt. pp. relaxed; not strained; unstrung; loosed. **Unbend'ingly**, ad.

UNBENEFICED, a. *ŭn-bĕn'ĕ-fĭst:* not holding a benefice or church living.

UNBENIGHTED, a. *ŭn'bĕ-nīt'ĕd:* not visited by darkness.

UNBENIGN, a. *ŭn'bĕ-nīn':* malignant; malevolent.

UNBESEEMING, a. *ŭn'bĕ-sēm'ĭng:* unbecoming; not befitting.

UNBESOUGHT, a. *ŭn'bĕ-sawt':* not sought by petition or entreaty.

UNBESPOKEN, a. *ŭn'bĕ-spō'kn:* not bespoken o ordered beforehand.

UNBESTOWED, a. *ŭn'bĕ-stōd':* not given; not disposed of.

UNBEWAILED, a. *ŭn'bĕ-wāld':* not lamented.

UNBIAS, v. *ŭn-bī'ăs:* to free from bias or prejudice. **Unbi'asing**, imp. **Unbi'ased**, pp. *-ăst,* freed from prejudice or bias: **Adj.** impartial; unprejudiced.

UNBID, a. *ŭn-bĭd',* or **Unbid'den**, a. *-bĭd'n:* not commanded; spontaneous; uninvited.

UNBIGOTED, a. *ŭn-bĭg'ŏt-ĕd:* free from bigotry.

UNBIND, v. *ŭn-bīnd':* to set free; to untie; to loose. **Unbind'ing**, imp. setting free; untying. **Unbound'**, pt. pp. *-bownd',* set free.

UNBISHOP, v. *ŭn-bĭsh'ŏp:* to deprive of episcopal orders.

UNBIT, a. *ŭn-bĭt'*, or Unbit'ten, a. *-bĭt'n:* not bitten.

UNBIT, v. *ŭn-bĭt':* to unbridle; among *seamen*, to remove the turns from off the bitts, as to *unbit* a cable.

UNBLAMABLE, a. *ŭn-blā'mă-bl:* free from blame or cause of blame; innocent; faultless. Unbla'mably, ad. Unbla'mableness, n. the state of being unblamable. Unblamed', a. free from censure.

UNBLEACHED, a. *ŭn-blēcht':* not bleached or whitened.

UNBLEMISHED, a. *ŭn-blĕm'ĭsht:* not stained; free from blemish or from reproach: free from deformity; irreproachable. Unblem'ishable, a. *-ĭsh-ă-bl,* incapable of being blemished.

UNBLENCHED, a. *ŭn-blĕnsht':* not confounded; undiminished. Unblench'ing, a. not shrinking or flinching; firm.

UNBLENDED, a. *ŭn-blĕnd'ĕd:* not blended or mingled.

UNBLESSED, or Unblest, a. *ŭn-blĕst':* excluded from benediction; unhappy.

UNBLIGHTED, a. *ŭn-blīt'ĕd:* not blighted; unblasted.

UNBLOODY, a. *ŭn-blŭd'ĭ,* and Unblood'ied, a. *-blŭd'ĭd:* not stained with blood; not cruel.

UNBLOWN, a. *ŭn-blōn':* not having the bud expanded; not inflated with wind.

UNBLUNTED, a. *ŭn-blŭnt'ĕd:* not blunted or made obtuse or dull.

UNBLUSHING, a. *ŭn-blŭsh'ĭng:* destitute of shame; impudent. Unblush'ingly, ad.

UNBODIED, a. *ŭn-bŏd'ĭd:* freed from the body; incorporeal.

UNBOILED, a. *ŭn-boyld':* not cooked in boiling water.

UNBOLT, v. *ŭn-bōlt':* to remove a bolt from, as from a door; to unfasten; to set open. Unbolt'ed, pp. a. freed from fastening by bolts; not having the bran separated, as in flour; unsifted.

UNBONNETED, a. *ŭn-bŏn'nĕt-ĕd:* without hat or bonnet; having no hat or bonnet on.

UNBOOKISH, a. *ŭn-bûk'ĭsh:* having but little of the knowledge that is obtained from books; not studious in books; unlearned; illiterate.

UNBOOTED, a. *ŭn-bôt'ĕd:* not having boots on.

UNBORN, a. *ŭn bawrn':* not brought into life; still to appear; future.

UNBORROWED, a. *ŭn-bŏr'rōd:* genuine; original; one's own.

UNBOSOM, v. *ŭn-bûz'ŭm:* to disclose freely, as opinions and feelings; to reveal in confidence. Unbos'oming, imp. Unbos'omed, pp. revealed in confidence, as one's feelings and griefs.

UNBOTTOMED, a. *ŭn-bŏt'tŭmd:* without a bottom; having no solid foundation.

UNBOUGHT, a. *ŭn-bawt':* obtained without money or purchase; not finding a purchaser.

UNBOUND, a. *ŭn-bownd':* not bound; loose; free from obligation; without a cover, as a book; not yet bound up into a volume or volumes.

UNBOUNDED, a. *ŭn-bownd'ĕd:* having no bound or limit; infinite; unlimited; without check or control; unrestrained; extravagant; interminable. Unbound'edly, ad.

UNBOWED, a. *ŭn-bowd':* not bent or arched, as the body in stooping or kneeling.

UNBRACE, v. *ŭn brās':* to loose; to relax. Unbra'cing, imp. Unbraced', pp.

UNBREATHABLE, a. *ŭn-brĕth'ă-bl:* that cannot be respired or breathed. Unbreathed', a. not breathed; in *OE.*, unexercised.

UNBRED, a. *ŭn-brĕd':* not polished in manners; ill educated; rude; in *OE.*, not begotten.

UNBREECHED, a. *ŭn-brĭcht':* having no breeches.

UNBREWED, a. *ŭn-brôd':* not mixed; genuine; pure.

UNBRIBED, a. *ŭn-brībd':* not corrupted or influenced by a gift of money.

UNBRIDLED, a. *ŭn-brī'dld:* unrestrained; licentious.

UNBROKEN, a. *ŭn-brō'kn:* not violated, as a promise; not subdued; not tamed; not accustomed to the saddle or harness, as a horse. Unbroke', a. *-brōk'*, for Unbroken.

UNBROTHERLY, a. *ŭn-brŭth'ėr-lĭ:* not becoming a brother; unkind.

UNBRUISED, a. *ŭn-brôzd':* not bruised; not hurt.

UNBUCKLE, v. *ŭn-bŭk'kl:* to loose from buckles; to unfasten. Unbuck'ling, imp. Unbuck'led, pp.

UNBUILD, v. *ŭn-bĭld':* in *OE.*, to raze; to destroy. Unbuilt, a. *ŭn-bĭlt'*, not yet built or erected.

UNBUOYED, a. *ŭn-boyd':* unmarked by buoys, as a channel; not borne up.

UNBURIED, a. *ŭn-bĕr'ĭd:* not put under-ground; not interred.

UNBURNED, a. *ŭn-bėrnd'*, or Unburnt', a. *-bėrnt':* not consumed by fire; not scorched; not baked.

UNBURTHEN, v. *ŭn-bėr'thn*, or Unbur'den, v. *-dn:* to ease; to throw off; to relieve the mind or heart by revealing what lies heavily on it.

UNBUSINESS-LIKE, a. *ŭn-bĭz'nĕs-līk:* not like one accustomed to business; confused and irregular in the management of ordinary affairs.

UNBUTTON, v. *ŭn-bŭt'tn:* to loose the fastenings by buttons.

UNCAGE, v. *ŭn-kāj':* to release from a cage. Uncaged', a. released from a cage or confinement.

UNCALCINED, a. *ŭn-kăl'sĭnd:* not calcined.

UNCALCULATING, a. *ŭn-kăl'kū-lā-tĭng:* not in the habit of studying details; inconsiderate.

UNCALLED, a. *ŭn-kawld′:* not summoned; not invited. **Uncalled-for**, a. not required or needed; improper.

UNCANCELLED, a. *ŭn-kăn′sĕld:* not cancelled, crossed out, or erased; not annulled.

UNCANDID, a. *ŭn-kăn′dĭd:* not frank or sincere. **Uncan′didly**, ad.

UNCANNY, a. *ŭn-kăn′nĭ* [see Canny]: in *Scot.* and *prov. Eng.*, not safe to meddle with; dangerous; not favorable or propitious; preternatural; ghost-like.

UNCANONICAL, a. *ŭn′kă-nŏn′ĭ-kăl:* not agreeable to the canons; not acknowledged as authentic. **Un′canon′ically**, ad. **Un′canon′icalness**, n. the state of being uncanonical.

UNCANVASSED, a. *ŭn-kăn′văst:* not canvassed.

UNCAP, v. *ŭn-kăp′:* to remove a cap or cover from; to open.

UNCAPABLE, a. *ŭn-kā′pă-bl:* not capable; incapable.

UNCARED-FOR, a. *ŭn-kārd′fŏr:* not regarded or heeded.

UNCA′RIA: see Gambir.

UNCAS, *ŭng′kass:* Indian chief: about 1588–1682; b. in the Pequot settlement, e. Conn. He became a war chief of his tribe, but about 1635 headed a revolt against Sassacus, the sachem, organized his followers as an independent tribe, to which he gave the name Mohegan, formerly borne by the Pequots, and made friends with the whites. In 1637 he aided the English in their war against the Pequots, and 1643 was their ally in the war against the Narragansetts, in which he defeated and captured their sachem, Miantonomoh. Several tribes combined against him 1648, but with little success; and 1657 his people were relieved, while being besieged by the Narragansetts, by the English under Ensign Leffingwell. A monument to his memory has been erected in Norwich, Conn.

UNCASE, v. *ŭn-kās′:* to take off or out, as from a cover; to display or exhibit the colors of a regiment.

UNCAUGHT, a. *ŭn-kawt′:* not yet caught or taken.

UNCAUSED, a. *ŭn-kawzd′:* existing without an author or a cause.

UNCEASING, a. *ŭn-sēs′ĭng:* continual; not intermitting; uninterrupted. **Unceas′ingly**, ad.

UNCELEBRATED, a. *ŭn-sĕl′ĕ-brā-tĕd:* not solemnized.

UNCENSURED, a. *ŭn-sĕn′shûrd:* not censured; exempt from blame.

UNCEREMONIOUS, a. *ŭn′sĕr-ĕ-mō′nĭ-ŭs:* without ceremony; not formal. **Un′ceremo′niously**, ad.

UNCERTAIN, a. *ŭn-sėr′tĭn:* not certain or sure; doubtful; unsettled; precarious. **Uncer′tainty**, n. want of certainty or precision; doubtfulness; something unknown.

UNCHAIN, v. *ŭn-chān′:* to unfasten, undo, or remove the chain; to set free from chains or restraint.

UNCHALLENGED, a. *ŭn-chăl′lĕnjd:* not objected to; not called to account.

UNCHANCY, a. *ŭn-chăn'sĭ* [*un*, not, and *chance*]: in *Scot.*, not lucky; dangerous.

UNCHANGEABLE, a. *ŭn-chānj'ă-bl:* not subject to variation or change; immutable. **Unchange'ableness**, n. the state or quality of being subject to no change; immutability. **Unchange'ably**, ad. **Unchanged'**, a. not changed or altered. **Unchang'ing**, a. suffering no alteration. **Unchang'ingly**, ad.

UNCHARGE, v. *ŭn-chârj':* in *OE.*, to retract an accusation. **Uncharged'**, a. not loaded, as a gun.

UNCHARITABLE, a. *ŭn-chăr'ĭ-tă-bl:* contrary to Christian love; severe in judging; harsh. **Unchar'itably**, ad. **Unchar'itableness**, n. want of charity.

UNCHARTERED, a. *ŭn-châr'tĕrd:* having no charter.

UNCHARY, a. *ŭn-chā'rĭ:* not cautious; not wary; not frugal.

UNCHASTE, a. *ŭn-chāst:* not chaste; not pure; libidinous. **Unchaste'ly**, ad. **Unchas'tity**, n. *-chăs-tĭ-tĭ*, lewdness; unlawful indulgence of the sexual appetite.

UNCHASTISED, a. *ŭn'chăs-tīzd':* not corrected or punished.

UNCHECKED, a. *ŭn-chĕkt':* not restrained or hindered; not contradicted.

UNCHECKERED, or **Unchequered**, a. *ŭn-chĕk'ĕrd:* not checkered; not diversified.

UNCHEERFUL, a. *ŭn-chēr'fŭl:* gloomy; melancholy; sad. **Uncheer'fulness**, n. *-nĕs*, gloominess of temper.

UNCHEWED, a. *ŭn-chôd':* not masticated or prepared by the teeth.

UNCHILD, v. *ŭn-chīld':* in *OE.*, to deprive of children; to render unworthy of the character of a child.

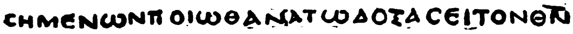
UNCHIVALROUS, a. *ŭn-shĭv'ăl-rŭs:* not according to chivalry.

UNCHRISTENED, a. *ŭn-krĭs'nd:* not baptized and named.

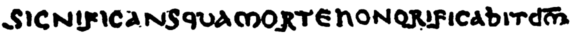
UNCHRISTIAN, a. *ŭn-krĭst'yăn:* contrary to the principles of Christianity; not converted to the Christian faith; infidel. **Unchrist'ianize**, v. to turn from the Christian faith.

UNCHURCH, v. *ŭn-chĕrch':* to expel from a church.

UNCIAL a. *ŭn'shal* [L. *uncĭālis*, pertaining to an ounce or inch—from *uncĭa*, the twelfth part of anything: F. *once;* It. *oncia*, an ounce or an inch—*lit.*, a letter an inch in size]: noting certain characters or letters of a large round kind between capital and small letters, used in the writing of anc. MSS., and in anc. inscriptions from the 3d to the 10th c. A.D.; written or carved in uncial letters: N. an uncial letter, or a manuscript written in uncials; a letter standing for a word in anc. inscriptions.—*Uncial Letters*, which began to take the place of capitals in the middle of the 3d c., differ from capitals (in which the oldest Greek and Latin MSS. are written) in being composed of rounded and not straight lines, and in showing tendency toward greater expedition in style. Uncial writing arose as writing on papyrus or vellum became common, the necessity for more rapid execution leading to the practice of curving the lines. It was more easily learned than the cursive style, and this was probably the cause of its becoming the favorite mode of writing books of importance among the monkish scribes; while legal instruments, which required greater dispatch, were executed by professional scribes in a corrupted form of the Roman cursive hand. Uncial writing prevailed from the 6th to the 10th c. The following specimens of uncial Greek and Latin writing are from a MS. of the four gospels and Acts of the Apostles in both languages, written early in the 6th c., and presented to the Univ. of Cambridge by Theodore Beza 1581. The passage is from John xxi. 19—'signifying by what death he should glorify God.' During the 6th and 7th c. a transitional style of writing prevailed in Italy, and to some extent elsewhere, in which the letters approximated more nearly to the Roman cursive hand: this passed by gradual transition into the *minuscule* manner, or small hand, which from the beginning of the 10th c. became usual in MSS.—See Silvestre's *Universal Palæography,* translated and edited by Sir F. Madden (Lond. 1850); *Traité de Diplomatique,* par deux Religieux Benedictins de la Congrégation de St. Maur (Par. 1755).



Greek.



Latin.

UNCIATIM, ad. *ŭn-sĭ-ā'tĭm* [L. *uncia,* an ounce]: ounce by ounce.

UNCIFORM, a. *ŭn'sĭ fawrm* [L. *uncus,* a hook; *forma,* shape]: having a curved or hooked form, applied to the last bone of the second row of the wrist-bones. **Un'cinate,** a, *-nāt* [L. *uncĭnātus,* hooked]: in *bot.* provided with a hooked process; furnished with hooked spines.

UNCIRCUMCISED, a. *ŭn-sėr'kŭm-sīzd:* not circumcised, applied to a Gentile as opposed to a Jew; sometimes in *N. Test.,* having had the operation of circumcision concealed. **Uncir'cumci'sion,** n. *-sĭzh'ŭn,* want of circumcision, applied to the Gentiles, as opposed to Jews.

UNCIRCUMSCRIBED, a. *ŭn-sėr'kŭm-skrībd':* not bounded or limited.

UNCIVIL, a. *ŭn-sĭv'ĭl:* not courteous in manners; not polite; rude. **Unciv'illy,** ad. **Unciv'ilized,** a. not reclaimed from savage life; rude; coarse.—**Syn.** of 'uncivil': uncourteous; discourteous; unpolite; uncourtly; unmannered; clownish.

UNCLAIMED, a. *ŭn-klāmd':* not demanded; not called for.

UNCLARIFIED, a. *ŭn-klăr'ĭ-fīd:* not purified or made clear.

UNCLASP, v. *ŭn-klăsp':* to open what is fastened with a clasp; to open that which clasps or embraces; to release from an embrace; in *OE.*, to disclose.

UNCLASSIC, a. *ŭn-klăs'sĭk*, or **Unclas'sical**, a. *-sĭ-kăl:* not according to the best models of writing; not pertaining to or in accord with the classical writers, or to classical style.

UNCLE, n. *ŭng'kl* [F. *oncle*—from L. *avun'cŭlus*, an uncle]: the brother of one's father or mother; a name also given to the husband of an aunt.

UNCLEAN, a. *ŭn-klēn':* foul; dirty; filthy; ceremonially impure; unchaste. **Uncleanly**, a. *ŭn-klĕn'lĭ*, foul; filthy; nasty. **Unclean'liness**, n. *-klĕn-*, want of cleanliness. **Unclean'ness**, n. *-klēn-*, foulness; dirtiness; ceremonial impurity; defilement by sin; unchastity; lewdness. **Uncleansed'**, a. *-klĕnzd*, not purified.

UNCLEAN'NESS, in the Old Testament: state of bodily infirmity which, for the time being, excluded the sufferer from the 'holy community.' This state of disability was induced in a variety of ways: birth, death, the different sexual functions and infirmities, all were, in different manner, causes of uncleanness, and treated according to their different degrees. To a certain extent some incongruous admixtures of plants, animals, even of materials in one garment, etc., also may be reckoned among things that 'defiled' or gave rise to a certain uncleanness. Fruits of a tree during its first three years were regarded as 'uncircumcised' and unclean and not to be eaten. See PURIFICATION: LEPROSY.

UNCLEAVABLE, a. *ŭn-klēv'ă-bl:* that cannot be split.

UNCLERICAL, a. *ŭn-klĕr'ĭ-kăl:* unbecoming a clergyman; contrary to the clerical character.

UN'CLE SAM: jocular name of the United States government or nation, used as John Bull is with respect to England; supposably a humorous extension of the letters U. S. (United States).

UNCLE TOM: hero of *Uncle Tom's Cabin:* see HENSON, JOSIAH: also STOWE, HARRIET ELIZABETH (BEECHER).

UNCLEW, v. *ŭn-klô':* to undo.

UNCLIPPED, a. *ŭn-klĭpt':* not clipped; not diminished or shortened by clipping.

UNCLOAKED, a. *ŭn-klōkt':* not covered or disguised.

UNCLOG, v. *ŭn-klŏg':* to free from anything that retards motion; to set at liberty. **Unclogged'**, a. set free from obstructions.

UNCLOISTER, v. *ŭn-kloys'tėr:* to set at large; to free from confinement.

UNCLOSE, v. *ŭn-klōz':* to open; to break the seal of, as a letter. **Unclo'sing**, imp. breaking the seal of. **Unclosed**, pp.: ADJ. open; not finished; not sealed.

UNCLOTHE. v. *ŭn-klōth':* to strip of clothes; to make naked. **UNCLOTH'ING**, imp.: N. act of taking off clothes. **UNCLOTHED'**, pp.: ADJ. not clothed; wanting clothes.

UNCLOUDED, a. *ŭn-klowd'ĕd:* free from clouds; not obscured. **UNCLOUD'EDNESS**, n. freedom from obscurity or gloom. **UNCLOUD'Y**, a. free from clouds; clear; free from obscurity or gloom.

UNCOATED, a. *ŭn-kōt'ĕd:* not covered with a coat.

UNCOCK, v. *ŭn-kŏk':* to let down the hammer of a gun or pistol.

UNCOFFINED, a. *ŭn-kŏf'fĭnd:* not furnished with or placed in a coffin.

UNCOIF, v. *ŭn-koyf':* to pull the cap off. **UNCOIFED'**, a. not wearing a coif or cap.

UNCOIL, v. *ŭn-koyl':* to unwind or open, as the turns of a rope.

UNCOINED, a. *ŭn-koynd':* not coined; in bars or ingots.

UNCOLLECTED, a. *ŭn'kŏl-lĕk'tĕd:* not brought together; not recovered from confusion or wandering, as the mind.

UNCOLORED, a. *ŭn-kŭl'ėrd:* not stained or dyed; not heightened in description.

UNCOMBED, a. *ŭn-kōmd':* not dressed with a comb.

UNCOMBINED, a. *ŭn'kŏm-bīnd':* not combined; simple; separate. **UN'COMBI'NABLE**, a. incapable of being combined or united.

UNCOMEATABLE, a. *ŭn'kŭm-ăt'ă-bl* [*un*, *come*, *at*, and *able*]: in *familiar language*, that cannot be come at; inaccessible.

UNCOMELY, a. *ŭn-kŭm'lĭ:* wanting in grace; unseemly. **UNCOME'LINESS**, n. *-nĕs*, want of beauty or grace.

UNCOMFORTABLE, a. *ŭn-kŭm'fėrt-ă-bl:* affording no comfort; giving uneasiness; gloomy. **UNCOM'FORTABLY**, ad. **UNCOM'FORTABLENESS**, n. the want of ease or rest.

UNCOMMANDED, a. *ŭn'kŏm-mând'ĕd:* not required by order or law; without the proper officers, as in the case of troops.

UNCOMMENDED, a. *ŭn'kŏm-mĕnd'ĕd:* not praised or lauded. **UN'COMMEN'DABLE**, a. not worthy of praise or approbation.

UNCOMMISERATED, a. *ŭn'kŏm-mĭz'ėr-ā-tĕd:* not pitied.

UNCOMMITTED, a. *ŭn'kŏm-mĭt'tĕd:* not committed; not pledged by anything said or done; not referred to a committee, as in parliament.

UNCOMMON, a. *ŭn-kŏm'mŏn:* not usual; rare; not often seen or known. **UNCOM'MONLY**, ad. to an unusual degree. **UNCOM'MONNESS**, n. *-mŏn-nĕs*, the state of being uncommon; infrequency; rareness.—SYN. of 'uncommon': unusual; unwonted; rare; scarce; infrequent.

UNCOMMUNICATED, a. *ŭn'kŏm-mū'nĭ-kā-tĕd:* not disclosed or delivered to others. **UN'COMMU'NICATIVE**, a. not communicative; reserved.

UNCOMPANIONABLE, a. *ŭn'kŏm-păn'yŭn-ă-bl:* not companionable; not sociable.

UNCOMPASSIONATE, a. *ŭn'kŏm-păsh'ŭn-āt:* having no pity or mercy.

UNCOMPENSATED, a. *ŭn'kŏm'pĕn-sā-tĕd:* not compensated; not rewarded.

UNCOMPLAINING, a. *ŭn'kŏm-plān'ĭng:* not murmuring or disposed to murmur.

UNCOMPLAISANT, a. *ŭn-kŏm'plā-zănt':* not civil; not courteous.

UNCOMPLETED, a. *ŭn'kŏm-plē'tĕd:* not completed; not finished.

UNCOMPLICATED, a. *ŭn-kŏm'plĭ-kā-tĕd:* not complicated; simple.

UNCOMPLIMENTARY, a. *ŭn'kŏm-plĭ-mĕn'tėr-ĭ:* not expressing civility or praise; rude.

UNCOMPLYING, a. *ŭn'kŏm-plī'ĭng:* unbending, as in disposition; not yielding to request or command; obdurate.

UNCOMPOUNDED, a. *ŭn'kŏm-pownd'ĕd:* not mixed; not intricate; simple.

UNCOMPREHENSIVE, a. *ŭn'kŏm-prĕ-hĕn'sĭv:* not comprehensive; unable to comprehend; in *OE.*, incomprehensible.

UNCOMPRESSED, a. *ŭn'kŏm-prĕst':* free from compression.

UNCOMPROMISING, a. *ŭn-kŏm'prō-mī'zĭng:* not compromising; not agreeing to terms; unyielding.

UNCONCEALED, a. *ŭn'kŏn-sēld':* not concealed or hid; not kept close or secret.

UNCONCEIVED, a. *ŭn'kŏn-sēvd':* not thought or imagined.

UNCONCERN, n. *ŭn'kŏn-sėrn':* want of concern; absence of anxiety; indifference. **UN'CONCERNED'**, a. not anxious; having no interest in; unmoved; indifferent. **UN'CONCERN'EDLY**, ad. with entire indifference; without interest or affection.

UNCONCILIATED, a. *ŭn'kŏn-sĭl'ĭ-ā-tĕd:* not propitiated; not brought into a state of friendship. **UN'CONCIL'IATING**, a. not of winning or engaging manners; not adapted to gain favor. **UN'CONCIL'IATORY**, a. not tending to gain favor.

UNCONCLUDED, a. *ŭn'kŏn-klô'dĕd:* not concluded or finished; not decided; not closed.

UNCONCOCTED, a. *ŭn'kŏn-kŏk'tĕd:* not concocted; not digested; not matured.

UNCONDEMNED, a. *ŭn'kŏn-dĕmd':* not condemned; not judged guilty; not disapproved, as a custom.

UNCONDENSED, a. *ŭn'kŏn-dĕnst':* not reduced to a smaller compass; not returned into its original form, as steam into water.

UNCONDITIONAL, a. *ŭn'kŏn-dĭsh'ŭn-ăl:* absolute; unreserved; not limited by conditions. **UN'CONDI'TIONALLY**, ad. without terms of limitation. **UNCONDI'TIONED**, a. *-dĭsh'ŭnd,* not having conditions or relations: absolute. **THE UNCONDITIONED**, in *metaph.*, that which is absolute or without limitation.

UNCONFINED, a. *ŭn'kŏn-fīnd':* free from restraint or control; unbounded. **UNCONFI'NABLE**, a. *-fī'nă-bl,* incapable of being confined; boundless.

UNCONFIRMED, a. *ŭn'kŏn-fĕrmd':* not confirmed or established; not fortified by resolution; not strengthened by additional testimony; not confirmed according to the chh. ritual.

UNCONFORMABLE, a. *ŭn'kŏn-fawrm'ă-bl:* not conforming; not consistent: not agreeable or agreeing; in *geol.*, applied to strata when one stratum or series of strata is laid on the upturned edges of another series. **UN'CONFORM'ABLY**, ad. **UN'CONFORM'**, a. OE. for **UNCONFORMABLE**. **UN'CONFORM'ITY**, n. *-ĭ-tĭ,* disagreement; absence of conformity.

UNCONFORM'ABLE STRATA: strata which rest on the more or less inclined edges of older beds. The existence of unconformability in a series of strata indicates an interval sufficiently long to permit of the consolidation, disturbance, and upheaval, denudation, and subsequent depression of the inferior beds. No indication of the period that has intervened is to be found in the unconformability itself; but some idea of it may be obtained by examination of the strata known to have been deposited elsewhere subsequent to the inferior rocks and previous to the overlying unconformable deposits. Numerous examples of unconformability occur in N. America: thus, the Eozoic rocks are tilted and planed off, showing that there was a great lapse of time before the Primordial sands were deposited on them in many places. Sometimes rocks of a comparatively late age rest on the earlier, the intervening ages not being represented. A useless expenditure of money in searching for minerals has been the frequent result of not taking the existence of unconformable strata into account. It seemed natural to expect that the Permian rocks of Upper Annandale (Scotland) covered beds of the true Coal measures; but an examination of the numerous natural sections where the base of the Permian sandstone is seen shows that it rests on the Silurian rocks; hence the attempts that have been made to reach coal through the Red Sandstone were simply a needless throwing away of money.

UNCONFUSED, a. *ŭn'kŏn-fūzd':* not confused or embarrassed.

UNCONFUTED, a. *ŭn'kŏn-fū'tĕd:* not confuted or overthrown. **UNCONFU'TABLE**, a. *-tă-bl,* incapable of being confuted.

UNCONGEALED, a. *ŭn'kŏn-jēld':* not congealed or frozen.

UNCONGENIAL, a. *ŭn'kŏn-jē'nĭ-ăl:* not congenial.

UNCONNECTED, a. *ŭn'kŏn-nĕk'tĕd:* not united; separate; loose; vague; incoherent.

UNCONNIVING, a. *ŭn'kŏn-nī'vĭng:* not conniving; not overlooking or winking at.

UNCONQUERABLE, a. *ŭn-kŏng'kėr-ă-bl:* that cannot be overcome or subdued; invincible; insuperable. Uncon'querably, ad. Uncon'quered, a. not vanquished or defeated; unsubdued.

UNCONSCIENTIOUS, a. *ŭn-kŏn'shĭ-ĕn'shŭs:* not regulated or restrained by conscience.

UNCONSCIONABLE, a. *ŭn-kŏn'shŭn-ă-bl:* not guided or influenced by conscience; unreasonable. Uncon'scionably, ad. in a manner that conscience and reason do not justify.

UNCONSCIOUS, a. *ŭn-kŏn'shŭs:* not conscious; not knowing; unaware. Uncon'sciously, ad. without knowledge or perception.

UNCONSECRATED, a. *ŭn-kŏn'sĕ-krā-tĕd:* not consecrated or set apart.

UNCONSENTING, a. *ŭn'kŏn-sĕnt'ĭng:* not yielding consent.

UNCONSIDERED, a. *ŭn'kŏn-sĭd'ėrd:* not considered or attended to.

UNCONSOLIDATED, a. *ŭn'kŏn-sŏl'ĭ-dā-tĕd:* not consolidated; not made solid.

UNCONSTANT, a. *ŭn-kŏn'stănt:* inconstant.

UNCONSTITUTIONAL, a. *ŭn-kŏn'stĭ-tū'shŭn-ăl:* contrary to the principles of the constitution. Uncon'stitu'tionally, ad. in a manner not warranted by the principles and usages of the constitution.

UNCONSTRAINED, a. *ŭn'kŏn-strānd':* free from constraint; voluntary. Un'constrain'edly, ad. without force or constraint; freely. Un'constraint', n. freedom; ease.

UNCONSUMED, a. *ŭn'kŏn-sūmd':* not consumed or expended; not wasted or dissipated.

UNCONSUMMATED, a. *ŭn-kŏn'sŭm-mā-tĕd:* not fully completed.

UNCONTAMINATED, a. *ŭn'kŏn-tăm'ĭ-nā-tĕd:* not polluted or defiled.

UNCONTEMNED, a. *ŭn'kŏn-tĕmd':* not despised.

UNCONTENDING, a. *ŭn'kŏn-tĕnd'ĭng:* not contesting.

UNCONTESTED, a. *ŭn'kŏn-tĕst'ĕd:* not contested or disputed.

UNCONTRADICTED, a. *ŭn-kŏn'tră-dĭk'tĕd:* not denied.

UNCONTRIVING, a. *ŭn'kŏn-trī'vĭng:* deficient in powers of contrivance.

UNCONTROLLABLE, a. *ŭn'kŏn-trōl'lă-bl:* that cannot be controlled; ungovernable; irresistible. **Un'control'lably**, ad. **Un'controlled'**, a. not governed or restrained; not resisted; unopposed. **Un'control'ledly**, ad. *-lĕd-lĭ.*

UNCONTROVERTED, a. *ŭn-kŏn'trŏ-vĕrt'ĕd:* not controverted or disputed; not liable to be called in question.

UNCONVERSABLE, a. *ŭn'kŏn-vĕr'să-bl:* not ready in conversation; not social.

UNCONVERTED, a. *ŭn'kŏn-vĕrt'ĕd:* not changed; not changed in opinion or life. **Un'conver'tible**, a. that cannot be converted or changed in form.

UNCONVINCED, a. *ŭn'kŏn-vĭnst':* not persuaded or satisfied. **Un'convin'cing**, a. without persuasive force.

UNCOOKED, a. *ŭn-kûkt':* not cooked or dressed, as food.

UNCORK, v. *ŭn-kŏrk':* to draw the cork from.

UNCORRECTED, a. *ŭn'kŏr-rĕk'tĕd:* not corrected; not revised; not amended; not rendered exact.

UNCORROBORATED, a. *ŭn'kŏr-rŏb'ŏ-rā-tĕd:* not confirmed.

UNCORRUPT, a. *ŭn'kŏr-rŭpt':* not depraved; not tainted with wickedness. **Un'corrup'ted**, a. not vitiated; not depraved or perverted. **Un'corrup'tible**, a. that cannot be corrupted. **Un'corrupt'ness**, n. rectitude; uprightness; purity.

UNCOUNTED, a. *ŭn-kownt'ĕd:* not numbered or counted.

UNCOUPLE, v. *ŭn-kŭp'l:* to loose; to disjoin, said of dogs, railway cars, or of things generally that are coupled or joined. **Uncoup'ling**, imp. **Uncoup'led**, a. set loose or free; single; not wedded.

UNCOURTEOUS, a. *ŭn-kėr-tē-ŭs:* uncivil; unpolite. **Uncour'teously**, ad. **Uncour'teousness**, n. disobliging treatment; incivility. **Uncourt'ly**, *-kōrt'lĭ*, a. not elegant or refined in manners, as those trained at the court of a prince; coarse; rustic.

UNCOUTH, a. *ŭn-kôth'* [AS. *un*, not, and *cuth*, known: AS. *cunnan*, to know (see Cunning)]: strange; awkward; ungraceful; ungainly; in *OE.*, unknown. **Uncouth'ly**, ad. *-lĭ*, oddly; strangely. **Uncouth'ness**, n. *-nĕs*, oddness; strangeness; awkwardness.—Syn. of 'uncouth': coarse; rude; clumsy; odd; ungainly; rough; gross.

UNCOVENANTED, a. *ŭn-kŭv'ĕ-nănt-ĕd:* not having joined in a league, covenant, or agreement, as in the Solemn League and Covenant of the Scottish people in the persecuting times of the Stuarts; in *theol.*, applied by some to those who have not entered into that relationship which God has been pleased, through Christ Jesus, to establish between Himself and His people, by such appointed means of grace as baptism and the Eucharist, as when a person dies unbaptized he is said to be left to the *uncovenanted* mercies of God; in the *old E. I. civil service*, applied to that department in which no entrance examination is required, and the appointees are not subject to any formal engagement, but may resign or be dismissed at any time: see also under Covenant.

UNCOVER, v. *ŭn-kŭv′ėr:* to remove any covering from; to deprive of clothes; to unroof, as a building; to lay open or bare; to bare the head in token of respect. Uncov′ering, imp. laying open to view. Uncov′ered, pp. laid open to view; laid bare.

UNCREATE, v. *ŭn′krē-āt′:* in *OE.*, to annihilate; to deprive of existence: Adj. not formed or made; not produced by creation; self existent. Uncreated, a. *ŭn′krē-ā′tĕd,* not yet created; not produced by creation.

UNCREDITED, a. *ŭn-krĕd′ĭt-ĕd:* not set to the credit of; not believed.

UNCRITICAL, a. *ŭn-krĭt′ĭ-kăl:* not critical; lacking the critical faculty; not according to the just rules of criticism.

UNCROPPED, a. *ŭn-krŏpt′:* not gathered; lying in fallow.

UNCROSSED, a. *ŭn-krŏst′:* not cancelled; not opposed; not thwarted.

UNCROWDED, a. *ŭn-krowd′ĕd:* not closely pressed together; not thronged.

UNCROWN, v. *ŭn-krown′:* to deprive of a crown; to deprive of sovereignty. Uncrowned′, a. *-krownd′*, not crowned; deprived of a crown.

UNCRYSTALLIZABLE, a. *ŭn-krĭs′tăl-lī′ză-bl:* that cannot be formed into crystals. Uncrys′tallized, a. not converted into crystals.

UNCTION, n. *ŭngk′shŭn* [F. *onction,* unction—from L. *unctĭō* or *unctĭōnem,* an anointing; *unctus,* anointed, smeared; *ungĕrĕ,* to anoint]: in *OE.*, the act of anointing; the act of rubbing or smearing with fat or fatty matter; anything softening; hence, in modern usage, that mode of address, tone of expression, or peculiar quality in the words used, which inspires the hearer with feelings of devotion, tenderness, sympathy, or the like; divine or sanctifying grace; also, contemptuously, hypocritical blandness or suavity. Extreme unction, in the *Rom. Cath. Chh.*, the sacrament or rite of anointing with consecrated oil, administered to persons at the point of death. Unc′tuous, a. *-tū-ŭs,* resembling oil or grease; oily; greasy; extremely bland or suave in address; in *min.*, having a greasy or soapy feel. Unc′tuousness, n. *-nĕs,* or Unc′tuos′ity, n. *-ŏs′ĭ-tĭ,* quality of being oily or greasy; fatness; oiliness; blandness of address.—*Unction,* the practice of anointing the body, or certain portions of the body, with oil, especially with the oil of olives, was resorted to by the ancients from motives of health (see Oils), of athletic development, or of luxury; but the practice is noticeable here chiefly in its relations to religion. Anointing with oil seems to have been supposed to carry with it the same effects in spiritual things which it produces in the natural world. It was a rite in frequent use among the Egyptians, as well as the Greeks and Romans; and the scriptural narrative of the ante-Mosaic religion contains evidence of its use (Gen. xxviii. 18. xxxi. 13). In the Mosaic ceremonial its use is still more frequent. Priests and kings were anointed on being set apart for office; also sacred vessels. The oil employed in these anointings was prepared of the most precious perfumes and balsams, and Ezekiel rebukes the Jews (xxiii. 41) for making a similar unguent for their personal uses. The special significance of the rite may be inferred from the circumstance that the popular name of the expected Messiah was the Christos, i.e., the Anointed. In Christian use, anointing from a very early time possessed the same sacred significance (see James v. 13–18): for its ecclesiastical use, see EXTREME UNCTION. Besides the anointing of the sick, however, there are many other sacred unctions traceable in ancient Christian practice—namely, in baptism, in confirmation, in ordination of priests and other clergy, in consecration of churches and altars, benediction of sacred vessels and utensils, etc. U. has been employed also in the coronation of kings; and in some countries curious traditions and legends are preserved connected with the unction of the king, or arising out of it: see RHEIMS.

UNCULTIVATED, a. *ŭn-kŭl'tĭ-vā-tĕd:* not cultivated; not instructed; not civilized; rough in manners; wild; in a state of nature.

UNCUMBERED, a. *ŭn-kŭm'bėrd:* not burdened; not embarrassed.

UNCURBED, a. *ŭn-kėrbd':* not curbed or restrained; licentious. **UNCUR'BABLE**, a. *-kėr'bă-bl,* that cannot be curbed.

UNCURED, a. *ŭn-kūrd':* not cured or healed.

UNCURL, v. *ŭn-kėrl':* to loose from ringlets; to lose the curl, or become straight. **UNCURLED'**, a. not formed into ringlets.

UNCURRENT, a. *ŭn-kŭr'rĕnt:* not current; not passing as a common coin.

UNCURSE, v. *ŭn-kėrs':* to free from any execration. **UNCURST'**, pp. *-kėrst'*, not execrated.

UNCURTAILED, a. *ŭn'kėr-tāld':* not curtailed or shortened.

UNCUT, a. *ŭn-kŭt':* not cut, as a precious stone; not separated or divided by cutting, especially said of the leaves of a book that have not been cut or dressed in the binding.

UNDAMAGED, a. *ŭn-dăm'ĭjd:* not damaged, spoiled, or made worse.

UNDATED, a. *ŭn-dā'tĕd:* having no date.

UNDATED, a. *ŭn'dā-tĕd* [L. *undātus*, in the form of waves—from *unda*, a wave]: having a waved surface; in *bot.*, rising and falling in waves toward the margin, as a leaf.

UNDAUNTED, a. *ŭn-dawnt'ĕd:* not subdued or depressed by fear; intrepid. UNDAUNT'EDLY, ad. UNDAUNT'EDNESS, n. fearless bravery.—SYN. of 'undaunted': bold; fearless; brave; courageous; valiant; gallant; heroic.

UNDAZZLED, a. *ŭn-dăz'ld:* not dazzled; not dimmed or confused by splendor.

UNDEAF, v. *ŭn-dĕf':* to free from deafness.

UNDEBASED, a. *ŭn'dĕ-bāst':* not debased; not adulterated.

UNDEBAUCHED, a. *ŭn'dĕ-bawcht':* not debauched; not corrupted.

UNDECAGON, n. *ŭn-dĕk'ă-gŏn* [L. *undecim*, eleven: Gr. *gōnĭa*, an angle]: a plane figure having eleven angles or sides.

UNDECANE, n. *ŭn'dē-kān* [L. *unus;* Eng. *decane*]: in *chem.*, $C_{11}H_{24}$; one of the series of paraffins obtained from Amer. petroleum. It has a sp. gr. of ·765 at 16°, and boils at 180° to 184°.

UNDECAYED, a. *ŭn'dĕ-kād':* still in full strength; not impaired by age or accident. UN'DECAY'ING, a. not suffering diminution or decline.

UNDECEIVABLE, a. *ŭn'dĕ-sēv'ă-bl:* not subject to be imposed on or misled. UN'DECEIVE', v. to free from deception, cheat, or mistake. UN'DECEIV'ING, imp. UN'DECEIVED', pp.

UNDECIDED, a. *ŭn'dĕ-sī'dĕd:* not decided or determined; wavering; hesitating.

UNDECIPHERED, a. *ŭn'dĕ-sī'fĕrd:* not deciphered or explained. UN'DECI'PHERABLE, a. incapable of being deciphered; enigmatic.

UNDECKED, a. *ŭn-dĕkt':* not decked or adorned; not having a deck, as a ship. UNDECK', v. *-dĕk'*, in *OE.*, to deprive of ornaments.

UNDECLARED, a. *ŭn'dĕ-klārd':* not declared or avowed.

UNDECLINABLE, a. *ŭn'dĕ-klī'nă-bl:* that cannot be declined or avoided. UN'DECLINED', a. in *gram.*, not declined or varied in termination, as a noun.

UNDECOMPOSABLE, a. *ŭn'dē-kŏm-pō'ză-bl:* that cannot be resolved into its constituent elements. UN'DECOMPOSED', a. not resolved, as into constituent elements.

UNDECORATED, a. *ŭn-dĕk'ō-rā-tĕd:* not adorned or embellished; plain.

UNDECORTICATED, a. *ŭn'dĕ-kŏr'tĭ-kā-tĕd:* not freed or cleaned from bark, husks, and the like.

UNDEDICATED, a. *ŭn-dĕd'ĭ-kā-tĕd:* not dedicated or consecrated; not inscribed to a patron.

UNDEEDED, a. *ŭn-dēd'ĕd:* in *law*, not transferred by deed; in *OE.*, not signalized by a deed or action.

UNDEFACED, a. *ŭn'dĕ-fāst':* not disfigured; not deprived of its form; not obliterated; legible. UN'DEFACE'ABLE, a. that cannot be defaced or disfigured.

UNDEFENDED, a. *ŭn'dĕ-fĕnd'ĕd:* not protected; without works of defense; exposed to assault; not defended, as an action in a court of law.

UNDEFIED, a. *ŭn'dĕ-fīd':* not set at defiance; not challenged.

UNDEFILED, a. *ŭn'dĕ-fīld':* not stained; not polluted; pure; clean.

UNDEFINABLE, a. *ŭn'dĕ-fī'nă-bl:* not capable of being described or limited; indefinable. **UN'DEFINED'**, a. not having its limits described; not described by definition or explanation.

UNDEFRAYED, a. *ŭn'dĕ-frād':* not defrayed or paid.

UNDEJECTED, a. *ŭn'dĕ-jĕk'tĕd:* not dejected; not depressed.

UNDELIBERATED, a. *ŭn'dĕ-lĭb'ėr-ā-tĕd:* not carefully considered.

UNDELIGHTED, a. *ŭn'dĕ-līt'ĕd:* not well pleased.

UNDELIVERED, a. *ŭn'dĕ-lĭv'ėrd:* not delivered; not communicated.

UNDEMOLISHED, a. *ŭn'dĕ-mŏl'ĭsht:* not demolished, pulled down, or destroyed.

UNDEMONSTRABLE, a. *ŭn'dĕ-mŏn'stră-bl:* not capable of demonstration. **UN'DEMON'STRATIVE**, a. not demonstrative; not free or communicative; reserved in manner. **UNDEM'ONSTRATED**, a. not proved.

UNDENIABLE, a. *ŭn'dĕ-nī'ă-bl;* that cannot be denied or contradicted; unquestionable; indisputable; positive; certain. **UN'DENI'ABLY**, ad.

UNDEPLORED, a. *ŭn'dĕ-plōrd':* not deplored or lamented.

UNDEPRAVED, a. *ŭn'dĕ-prāvd':* not corrupted or vitiated.

UNDEPRECIATED, a. *ŭn'dĕ-prē'shĭ-ā-tĕd:* not lowered in value.

UNDEPRIVED, a. *ŭn'dĕ-prīvd':* not deprived; not divested of by authority.

UNDER, prep. *ŭn'dėr* [Dan. and Sw. *under;* Dut. *onder;* Icel. *undir;* Goth. *undar;* Ger. *unter*, under: allied to Skr. *antar;* L. *inter*, among, within]: beneath or below, expressing position with reference to something over or above, or which surmounts or towers aloft, as *under* the sun, the surface, the skin, a bushel, etc.; in a position or at a point inferior to or lower than; subordinate to; in a state of subjection to; subject to, as *under* certain conditions; in accordance with, as *under* the rule; in course of, as the question is *under* consideration; less than, as he is still *under* age; attested by, as *under* his own hand: **AD.** in a lower or subordinate condition; in subjection: **ADJ.** lower in position, rank, or degree; subordinate. **TO KNOCK UNDER**, to yield; to submit. **UNDER ARMS**, in *mil.*, fully equipped for action. **UNDER FIRE**, exposed to an enemy's shot. **UNDERGROUND**, below the surface of the ground. **UNDER SAIL**, among *seamen*, moved by sails; using sails—applied to a ship when sailing, as distinguished from steaming. **Under sentence**, condemned. **Under the lee**, to the leeward —that is, the sheltered side (see Lee). **Under the rose**, in confidence; privately; secretly. **Under way**, in progress; moving—applied to the sailing of a ship; having started. To **keep under**, to hold in subjection.—The prep. *under* frequently coalesces with its noun to form adverbs and adjectives, as *underground*, *underfoot*, *underhand*, etc. *Note.*—All the possible compounds of *under* are not given in the vocabulary, but only those which are most likely to need explanation. Compounds of *under* not given may be found by consulting the cyclopedia for the separate parts. *Under* is not usually separated by a hyphen, and is sometimes prepositional, as *under*ground, and sometimes adverbial, as *under*done.

UNDERAGENT, n. *ŭn'dėr-ā'jĕnt:* an inferior agent.

UNDERBEAR, v. *ŭn'dėr-bār':* in *OE.*, to support; to endure; to line, as a dress. **Underborne'**, pp. *-bōrn'*. **Underbear'ing**, imp.: N. in *OE.*, the act of supporting. **Underbear'er**, n. *-bār'ėr*, one who supports or bears up a weight, as a coffin at a funeral.

UNDERBID, v. *ŭn'dėr-bĭd':* to bid less than the value, or than is offered by another. **Un'derbid'ding**, imp.

UNDERBRED, a. *ŭn'dėr-brĕd:* of inferior breeding or manners; coarse; vulgar.

UNDERCLAY, n. *ŭn'dėr-klā:* in *geol.*, those beds of clay which immediately underlie seams of coal, and which seem to have formed the ancient soil or mud on which the vegetation of the coal-bed flourished.

UNDERCLERK, n. *ŭn'dėr-klėrk:* a junior clerk.

UNDERCLIFF, n. *ŭn'dėr-klĭf:* in *geol.*, a subordinate terrace or cliff between the sea and the original cliff, by the falling down of the upper part of the latter.

UNDERCOAT, n. *ŭn'dėr-kōt:* a coat worn beneath a greatcoat or other coat.

UNDERCROFT, n. *ŭn'dėr-krŏft* [*under*, and prov. Eng. *croft* for *crypt*, a vault (see Crypt)]: a vault under the choir or chancel of a cathedral or other church; any secret walk or vault under ground.

UNDERCURRENT, n. *ŭn'dėr-kŭr-rĕnt:* a current below the surface of the water; hence, something active but not visible, said of a sentiment or tendency—as, an *undercurrent* of socialism.

UNDERDONE, a. *ŭn'dėr-dŭn':* done or cooked less than is requisite or usual.

UNDERDRAIN, n. *ŭn'dėr-drān:* a drain or trench below the surface: V. *ŭn'dėr-drān'*, to drain by cutting a channel below the surface of the ground. **Un'derdrained'**, pp. drained by cutting a channel below the surface.

UNDERFONG, v. *ŭn'dėr-fŏng'* [*under*, and AS. *fongen*, taken—from *fon*, to take, to seize (see Fang)]: in *OE.*, to take in hand; to undertake; to deceive; to ensnare.

UNDERFOOT, ad. *ŭn'dėr-fŭt:* under the feet; beneath: **Adj.** servile; base; also applied to a kind of granite paving.

UNDERGIRD, v. *ŭn'dėr-gėrd':* to bind below; to gird round the bottom: see also **Frap**.

UNDERGO, v. *ŭn'dėr-gō':* to endure something burdensome; to suffer; to sustain without sinking or yielding; to undertake; to hazard; to be subject to; be subjected to; experience; to underlie; to possess. **Un'dergo'ing**, imp. **Un'derwent'**, pt. *-wĕnt'*. **Un'dergone'**, pp. *-gŏn'*, borne; sustained; endured.

UNDERGRADUATE, n. *ŭn'dėr-grăd'ū-āt:* a member or student of a university who has not taken his first degree. **Un'dergrad'uateship**, n. the office or condition of an undergraduate.

UNDERGROUND, n. *ŭn'dėr-grownd:* a space beneath the surface of the ground: **Ad.** or **Adj.** beneath the surface of the earth, as *underground* railways.

UNDERGROWTH, n. *ŭn'dėr-grōth:* that which grows under trees.

UNDERHAND, a. *ŭn'dėr-hănd:* secret; done by meanness or fraud; clandestine: **Ad.** by meanness and fraud; by secret means.

UNDERHILL, *ŭn'dėr-hĭl*, **John**: colonist. d. about 1672; b. Warwickshire, England. He rendered army service in the Netherlands and at Cadiz; came to America 1630; became a representative of Boston in the assembly; commanded the colonial troops which defeated the Pequot Indians 1637; was banished because of his religious views; returned and was appointed gov. of Exeter and Dover, N. H., 1641; removed to Flushing, L. I., 1646; and was an officer in the war between the Dutch and the Indians. He received a tract of 150 acres from the Mantinenoc Indians on Long Island 1667. He died at Oyster Bay.

UNDERHUNG, a. *ŭn-dėr-hŭng':* projecting, as applied to the lower jaw.

UNDERIVED, a. *ŭn-dĕ-rīvd':* not borrowed; not received from a foreign source.

UNDER-KEEPER, n. *ŭn'dėr-kēp'ėr:* a subordinate keeper.

UNDERLAY, v. *ŭn'dėr-lā':* to lay or place under or beneath; to support by something laid under: N. same as **Underlie** (q.v.). **Un'derlay'ing**, imp. **Un'derlaid'**, pp.

UNDER-LEASE, in Law: alienation by a lessee of part of his lease. Even an alienation of the whole lease, with reservation of the rent, has been regarded as an U.-L. When a lessee transfers all his interest in the lease, the act is an assignment, not an U.-L. The tenant in occupation by virtue of U.-L. has the same rights as the first lessee, and no more.

UNDERLET, v. *ŭn'der-lĕt':* to sublet; to let below the value.

UNDERLIE, v. *ŭn'dėr-lī':* to lie beneath, as a support: to be liable to, as a challenge: N. in *mining*, the dip or inclination of a mineral vein viewed from above downward; also **UNDERLAY**, n.

UNDERLINE, v. *ŭn'dėr-līn':* to draw a line under; to mark with a line below the word or words. **UN'DERLINED'**, pp. marked with a line underneath.

UNDERLING, n. *ŭn'dėr-lĭng* [dim. of *under*]: an inferior person or agent; a mere subordinate; a mean fellow.

UNDERMINE, v. *ŭn'dėr-mīn':* to form a mine under; excavate beneath, as earth or rock, for the purpose of creating a fall, or of blowing up the mass; to remove the foundation or support of anything; to injure by secret and dishonorable means. **UN'DERMI'NING**, imp. **UN'DERMINED'**, pp. **UN'DERMI'NER**, n. one who undermines; one who subverts by secret or dishonorable means.

UNDERMOST, a. *ŭn'dėr-mōst:* lowest in place or condition.

UNDERN, n. *ŭn'dėrn* [AS.—from *under*, which see]: in *OE.*, the third hour of the day, that is, 9 o'clock A.M.; or from 9 o'clock to noon (see **TERCE**); in *prov. Eng.*, the afternoon.

UNDERNEATH, ad. *ŭn-dėr-nēth'* [AS. *underneothan*, underneath—from *under*, under, and *neothan*, beneath]: below; in a lower place: **PREP.** beneath; below.

UNDERPAY, v. *ŭn'dėr-pā':* to pay at too small a rate; to pay too little.

UNDERPIN, v. *ŭn'dėr-pĭn':* to lay stones under, as a building, or wall on which it is to rest; to prop; to support by some solid foundation. **UN'DERPIN'NING**, n. the act of one who underpins; the stones on which a building immediately rests; the foundation-wall of a building.

UNDERPLOT, n. *ŭn'dėr-plŏt:* a series of events in a play proceeding collaterally with the main story; a subordinate plot; a clandestine scheme.

UNDERPROP, v. *ŭn'dėr-prŏp':* to support; to uphold.

UNDERRATE, v. *ŭn'dėr-rāt':* to rate below the value. **UN'DERRA'TED**, a. pp. valued too low.

UNDERRUN, v. *ŭn'dėr-rŭn':* among *seamen*, to pass a boat or ship along or under a cable or rope—the cable being raised and passed over the bows and stern, the men hauling the boat along by pulling upon the cable.

UNDERSAY, v. *ŭn'dėr-sā':* in *OE.*, to say in a slighting way, or by way of contradiction.

UNDER-SECRETARY, n. *ŭn'dėr-sĕk'rĕ-tă'rĭ:* an assistant secretary.

UNDERSELL, v. *ŭn'dėr-sĕl':* to sell at a lower price than.

UNDER-SERVANT, n. *ŭn'dėr-sėr'vănt:* a servant subordinate to another or others.

UNDERSETTER, n. *ŭn'dėr-sĕt'tėr* [*under*, and AS. *settan*, to place]: in *OE.*, a support; a prop; a pedestal.

UNDER-SHERIFF, n. *ŭn'dėr-shĕr'ĭf:* a sheriff acting under a superior; a deputy-sheriff.

UNDERSHOT, a. *ŭn'dėr-shŏt:* moved by water passing under or acting on the underpart, as the wheel of a mill.

UNDERSHRUB, n. *ŭn'dėr-shrŭb:* in *bot.*, a woody plant of small size, the ends of whose branches perish every year.

UNDERSIGN, v. *ŭn'dėr-sīn':* to write one's name at the foot. UN'DERSIGNED', a. subscribed at the bottom or end of a writing: N. the person or persons who subscribe their names to any document.

UNDERSIZED, a. *ŭn'dėr-sīzd:* of a size less than the common; stunted.

UNDERSOIL, n. *ŭn'dėr-soyl:* subsoil.

UNDERSONG, n. *ŭn'dėr-sŏng:* the chorus or burden of a song.

UNDERSTAND, v. *ŭn'dėr-stănd'* [*under*, and *stand:* AS. *understandan*, to understand]: to comprehend fully; to have just and adequate ideas of; to perceive; to discern; to know the meaning of; to know without expressing; to know what is not expressed; to infer; to be informed by another; to learn. UN'DERSTAND'ING, imp.: ADJ. knowing; skilful; intelligent: N. that power of the mind by which it is enabled to receive or comprehend the real state of things presented to it, or that by which men derive ideas from sensations; the faculty of reflection and generalization; among *German metaphysicians*, the faculty of the mind which deals with real, practical, and material knowledge and the adaptation of means to ends, and which is distinguished from *reason—understanding* discerning relations only, while *reason* discerns truth itself; intellect; comprehension; conception; intelligence; discernment; wisdom; terms of communication. UN'DERSTOOD', pt. pp. UN'DERSTAND'ED, pp. *-stănd'ĕd*, OE. and *familiarly*, for UNDERSTOOD; known as to meaning or import.

UNDERSTATE, v. *ŭn'dėr-stāt':* to represent less strongly than the truth will bear; to state too low.

UNDERSTRAPPER, n. *ŭn'dėr-străp'pėr:* an inferior agent; a petty fellow.

UNDERSTUDY, n. *ŭn'dėr-stŭd'ĭ* [prefix *under;* Eng. *study*]: an actor or actress who studies a part allotted to another performer, so as to be ready to undertake it in case of necessity.

UNDERTAKE, v. *ŭn'dėr-tāk':* to engage in; to enter upon; to take in hand; to take upon one's self; to covenant; to stand bound; to promise; in *OE.*, to assume a character; to engage with; to have the charge of; to venture; to hazard. UN'DERTA'KING, imp. engaging in; beginning to perform: N. any business or project which a person engages to perform; an enterprise; an engagement; undertaker's business. UN'DERTOOK', pt. did undertake. UN'DERTA'KEN, pp. UN'DERTA'KER, n. one who engages in any business or project; one who makes or supplies coffins, prepares the dead for burial, and manages funerals.

UNDER-TENANT, n. *ŭn'dėr-tĕn'ănt:* one who holds from a tenant and not from the proprietor.

UNDERTIME, n. *ŭn'dėr-tīm:* in *OE.*, same as *Undern* (q.v.).

UNDERTONE, n. *ŭn'dėr-tōn:* a lower manner of speaking than usual; a low or subdued tone.

UNDERTOW, n. *ŭn'dėr-tō:* a nautical term for any decided undercurrent of water, opposite to that of the surface; the backward flow of a wave that breaks on a beach.

UNDERVALUE, v. *ŭn'dėr-văl'ū:* to value or estimate below the real worth; to rate too low; to esteem lightly; to hold in mean estimation; to despise. **Un'derval'uing**, imp. **Un'derval'ued**, pp. **Un'derval'ua'tion**, n. a value or estimate below the real worth.

UNDERWENT: pt. of the verb **Undergo** (q.v.).

UNDERWOOD, n. *ŭn'dėr-wûd:* small trees and bushes growing among large trees; coppice.

UNDERWOOD, *ŭn'dėr-wûd*, **Adin Ballou**: lawyer: 1828, May 19—1888, Jan. 14; b. Milford, Mass. He graduated at Brown Univ. 1849; was admitted to the bar 1853; and practiced in Boston till the beginning of the civil war. He entered the Union army as capt. of vols. 1861; was commissioned col. 1863, Apr., and brig.gen. Nov. 6; and was brevetted maj.gen. of vols. 1865, Aug. 13. A wound received while leading a charge to relieve the beleaguered army at Chattanooga 1863, Oct. 28, incapacitated him for service for more than a year. He was surveyor of the port of Boston 1865, Aug. 20—1886, July. He published *History of the Thirty-third Massachusetts Regiment* (Boston 1881).

UNDERWORK, v. *ŭn'dėr-wėrk':* to attempt to destroy or injure by clandestine measures; to work at a less price than others; to expend too little work on: N. *-wėrk*, subordinate work; petty affairs. **Un'derwrought'**, pt. pp.

UNDERWRITE, v. *ŭn'dėr-rīt':* to subscribe, as one's name to a policy of insurance; to practice insuring. **Un'derwrī'ting**, imp.: N. act or practice of insuring ships, goods, etc. (see **Insurance**). **Un'derwri'ter**, n. one who insures ships, goods, etc., for a certain amount in case of loss or damage, by subscribing his name to a formal document, called a policy, in consideration of a certain sum per cent. **Un'derwrit'ten**, pp.

UNDESCRIBED, a. *ŭn'dē-skrībd':* not represented or set forth. **Un'descri'bable**, a. that cannot be described or represented in words.

UNDESERVED, a. *ŭn'dē-zėrvd':* not merited. **Un'deser'vedly**, ad. without desert, either good or evil. **Un'deser'vedness**, n. the state or quality of being undeserved. **Un'deser'ver**, n. *-vėr*, in *OE.*, one of no merit. **Un'deser'ving**, a. not having merit; not having worth. **Un'deser'vingly**, ad.

UNDESIGNATED, a. *ŭn-dĕs'ĭg-nā-tĕd:* not designated, marked out, or indicated.

UNDESIGNED, a. *ŭn'dĕ-zīnd':* not intended; not proceeding from purpose; unintentional. UN'DESIGN'EDLY, ad. UN'DESIGN'ING, a. not acting with set purpose; upright; having no artful purpose.

UNDESIRABLE, a. *ŭn'dĕ-zī'ră-bl:* not to be wished; that does not please. UN'DESIRED', a. *-zīrd'*, not desired; not solicited. UN'DESI'RING, a. not wishing. UN'DESI'ROUS, a. *-zī'rŭs*, not eager to obtain.

UNDETECTED, a. *ŭn'dĕ-tĕk'tĕd:* not discovered; not laid open.

UNDETERMINED, a. *ŭn'dĕ-tĕr'mĭnd:* not settled or fixed on; undecided.

UNDETERRED, a. *ŭn'dĕ-tĕrd':* not deterred or restrained by fear or obstacles.

UNDEVIATING, a. *ŭn-dē'vĭ-ā-tĭng:* not departing from the way or from principle; steady; regular; unerring. UNDE'VIATINGLY, ad.

UNDEVISED, a. *ŭn'dĕ-vīzd:* not devised or bequeathed.

UNDEVOUT, a. *ŭn'dĕ-vowt':* not devout; without devotion.

UNDID, v. *ŭn-dĭd':* pt. of the verb UNDO (q.v.).

UNDIGESTED, a. *ŭn'dĭ-jĕs'tĕd:* not digested; not dissolved in the stomach, as food.

UNDIGHT, v. *ŭn-dīt'* [*un*, the opposite; AS. *dihtan*, to set in order, to arrange; Ger. *dichten*, to compose]: in *OE.*, to put off, as a part of dress or a personal ornament.

UNDIGNIFIED, a. *ŭn-dĭg'nĭ-fīd:* not marked or not consistent with dignity.

UNDILUTED, a. *ŭn'dĭ-lō'tĕd:* not rendered more fluid; not weakened in strength.

UNDIMINISHABLE, a. *ŭn'dĭ-mĭn'ĭsh-ă-bl:* not capable of being made less or smaller. UN'DIMIN'ISHED, a. not lessened; not impaired. UN'DIMIN'ISHING, a. not becoming less.

UNDIMMED, a. *ŭn-dĭmd':* not dimmed or obscured.

UNDINE, *ŭn-dēn'* or *ŭn'dēn* [perhaps from *unda*, a wave]: a water-spirit of the female sex. Among all the different orders of elementary spirits, according to Paracelsus, Undines intermarry most readily with human beings, and the U. who gives birth to a child under such a union receives with her babe a human soul. But the man who takes an U. to wife must be careful not to go on the water with her, or at least not to anger her while there, for in that case she will return to her original element. Should this happen, the U. is not disposed to consider her marriage dissolved, but will seek to destroy her husband should he venture on a second marriage. Baron de la Motte Fouqué has made this Paracelsist fancy the basis of his exquisite tale *Undine*.

UNDINTED, a. *ŭn-dĭn'tĕd:* not impressed or hollowed by a blow.

UNDIPLOMATIC, a. *ŭn-dĭp'lō-măt'ĭk:* not according to diplomatic rules; impolitic.

UNDIRECTED, a. *ŭn'dĭ-rĕk'tĕd:* not guided or instructed; not addressed, as a letter.

UNDISCERNED, a. *ŭn'dĭs-zĕrnd':* not discerned or perceived; not seen or observed; not discovered. **Un'discern'ible**, a. that cannot be discerned; invisible. **Un'discern'ing**, a. not capable of seeing or discriminating; lacking judgment or the power of discrimination; injudicious.

UNDISCHARGED, a. *ŭn'dĭs-chârgd':* not discharged; not freed from any load, burden, or obligation.

UNDISCIPLINED, a. *ŭn-dĭs'sĭ-plĭnd:* not duly exercised and taught; raw; not instructed; not subdued.

UNDISCLOSED, a. *ŭn'dĭs-klōzd':* not disclosed or revealed; not unfolded.

UNDISCOVERABLE, a. *ŭn'dĭs-kŭv'ėr-ă-bl:* that cannot be found out; that cannot be brought to light. **Un'discov'ered**, a. not brought to light; not yet found out.

UNDISCRIMINATING, a. *ŭn'dĭs-krĭm'ĭ-nā-tĭng:* not discriminating.

UNDISGUISED, a. *ŭn'dĭs-gīzd':* not disguised or covered with a mask; open; candid; frank; simple.

UNDISHONORED, a. *ŭn'dĭs-ŏn'ėrd:* not disgraced.

UNDISMAYED, a. *ŭn'dĭs-mād':* not dismayed or disheartened by fear; not discouraged.

UNDISPOSED, a. *ŭn'dĭs-pōzd':* indisposed; not sold, settled, arranged, or arranged for—always with *of.*

UNDISPUTED, a. *ŭn'dĭs-pū'tĕd:* not disputed or contested; not called in question. **Un'dispu'tedly**, ad. without question or dispute.

UNDISSEMBLED, a. *ŭn'dĭs-sĕm'bld:* open; undisguised. **Un'dissem'bling**, a. not exhibiting a false appearance; truthful.

UNDISSIPATED, a. *ŭn-dĭs'sĭ-pā-tĕd:* not scattered; not dispersed.

UNDISSOLVABLE, a. *ŭn'dĭz-zŏl'vă-bl:* that cannot be dissolved or melted; that cannot be loosened. **Un'dissolved'**, a. not dissolved; not melted; not broken; intact. **Un'dissolv'ing**, a. not melting.

UNDISTENDED, a. *ŭn'dĭs-tĕnd'ĕd:* not enlarged.

UNDISTILLED, a. *ŭn'dĭs-tĭld':* not distilled; having the spirit or essence still unextracted.

UNDISTINGUISHABLE, a. *ŭn'dĭs-tĭng'gwĭsh-ă-bl:* that cannot be distinctly seen; indistinguishable. **Un'distin'guishably**, ad. **Un'distin'guished**, a. not so marked as to be distinctly known; not plainly discerned; not marked by any particular property; not eminent; not treated with any particular respect. **Un'distin'guishing**, a. making no difference; not discriminating.

UNDISTRACTED, a. *ŭn'dĭs-trăk'tĕd:* not distracted; not perplexed by being drawn toward a variety of objects.

UNDISTURBED, a. *ŭn'dĭs-tèrbd':* free from interruption; unmolested; serene; tranquil; not agitated, as water. **Un'disturb'ing**, a. not molesting.

UNDIVERSIFIED, a. *ŭn'dĭ-vèr'sĭ-fīd:* not varied; uniform.

UNDIVERTED, a. *ŭn'dĭ-vèr'tĕd:* not turned aside; not amused.

UNDIVIDABLE, a. *ŭn'dĭ-vĭ'dă-bl:* that cannot be separated into parts; indivisible. **Un'divi'ded**, a. not separated; not separated into parts; unbroken; whole. **Un'divi'dedly**, ad. so as not to be parted.

UNDIVULGED, a. *ŭn'dĭ-vŭljd':* not revealed or disclosed; kept secret.

UNDO, v. *ŭn-dô':* to reverse what has been done; to annul; to loose; to untie; to unfasten; to unravel; to open; to ruin. **Undo'ing**, imp.: N. the reversing of what has been done; ruin. **Undid'**, pt. **Undone'**, pp. annulled; destroyed; ruined, as, he has *undone* all my work: Adj. not performed; not executed, as, he has left his own work *undone*. **Undo'er**, n. one who undoes; one who destroys.

UNDOCK, v. *ŭn-dŏk':* to take out of dock.

UNDOMESTICATED, a. *ŭn'dō-mĕs'tĭ-kā-tĕd:* not accustomed to a family life; not tamed.

UNDOUBTED, a. *ŭn-dowt'ĕd:* not called in question, admitting no doubt; indisputable; not subjected to suspicion. **Undoubt'edly**, ad. without question. **Undoubt'ing**, a. not hesitating respecting the truth; admitting no doubt; not fluctuating in uncertainty; not wavering. **Undoubt'ingly**, ad. **Undoubt'ful**, a. *-fûl,* not doubtful; plain; evident.

UNDRAPED, a. *ŭn-drāpt':* not covered with drapery; nude.

UNDRAWN, a. *ŭn-drawn':* not pulled by any external force; not allured; not drawn, as liquor from a cask, or a ticket in a lottery; not portrayed.

UNDREAMED, a. *ŭn-drēmd'*, or **Undreamt'**, a. *-drĕmt':* not thought of; not dreamed of.

UNDRESS, v. *ŭn-drĕs':* to divest of clothes; to strip. **Un'dress**, n. a loose informal dress; not the dress usually and formally worn; ordinary dress, as opposed to 'full dress.' **Undress'ing**, imp. **Undressed'**, pp.: Adj. not dressed; not attired; not trimmed; not cooked; not put in order.

UNDRILLED, a. *ŭn-drĭld':* not taught and trained by frequent exercise.

UNDUE, a. *ŭn-dū':* that cannot yet be demanded by right; not legal; improper; excessive; not agreeable to any rule or standard. **Undu'ly**, ad. not according to duty or propriety; not in proper proportion; excessively.

UNDULATE, v. *ŭn'dŭ-lāt* [L. *undŭlātus*, diversified as with waves—from *unda*, a wave]: to have a wavy motion; to rise up and down, as waves; to move or play, as curls or waves; to cause to vibrate; to vibrate. **Un'dulating**, imp. *-lā-tĭng*, waving: Adj. wavy; rising and falling, as waves; having a waved surface, as land. **Un'dula'tingly**, ad. *-lĭ*. **Un'dulated**, a. having a waved or ridged surface, as a tract of country. **Un'dula'tion**, n. *-lā'shŭn*, a waving motion or vibration; a wavy appearance; alternate elevations and depressions of surface. **Un'dula'tory**, a. *-tėr-ĭ*, resembling the rising and falling motion of waves.

UN'DULATORY THEORY OF LIGHT: the theory that light is due to undulating motion in an ethereal medium. Optics (q.v.) ranks next to Dynamics in the category of nearly *exact* sciences—that is, of sciences whose fundamental principles are so well known that the result of almost any new experimental combination can be predicted mathematically. Given the forces acting on a body, the Laws of Motion (q.v.) enable us, by purely mathematical processes, to determine the consequent motion. The science of Optics awaits, for its full attainment of exactness, some great step in molecular physics which may give us the clue to the nature of the minute motions on which Light, Heat, Electric Currents, and Magnetism depend. In our ignorance of the ultimate nature of matter, we are unable to apply mathematical reasoning with perfect correctness and comprehensiveness.

Optics is divided into two parts, *Physical* and *Geometrical*. Of these, the latter contents itself with assuming certain obvious experimental truths, such as the fact that light in a uniform medium moves in straight lines, the ordinary laws of reflection and refraction, etc., and, making these its basis, employs mathematics to develop their further consequences. It is thus that theory has shown how to carry to their utmost perfection such exquisite specimens of art as the best telescopes and microscopes of the present day. But these investigations, and their practical application, are wholly independent of the *nature* of light, and cannot be affected by discoveries in that direction.

It is otherwise when we come to Physical Optics. This commences with the question: '*What is light?*' and endeavors to deduce from the nature of light the experimental laws which, as we have seen, are assumed as the basis of Geometrical Optics.

By two perfectly distinct classes of astronomical observations—Aberration (q.v.) and the Eclipses of Jupiter's satellites—we know that light takes *time* to pass from one body to another—the velocity, however, being enormous—about 200,000 m. per second. Hence it follows that either *Matter* (q.v.) or *Energy* (see Force) must be transferred from a body to the eye before we can see it. Here we have at once the rival physical theories of light; which have alternately had the advantage of one another in explaining observed phenomena. It is only of late years that an *experimentum crucis* has decided between them—

by showing one of them to be utterly incompatible with a result of observation.

Newton adopted the corpuscular theory, in which light is supposed to consist of material particles—i. e., he adopted the first of the two possible hypotheses; and he gave the first instance of the solution of a problem involving molecular forces by deducing from this theory the laws of reflection and single refraction. We shall see immediately that this beautiful investigation led to the destruction of the theory from which it was deduced. But, independent of this, there are many grave and obvious objections to the corpuscular theory; for it involves essentially the supposition of material particles impinging on the eye with the astounding velocity of 200,000 m. per second! If such particles weighed but the millionth of a pound, each would have something like ten times the Momentum (q.v.) (i.e., the battering power) and *six million* times the Vis-viva (see WORK), or kinetic energy (i.e., the penetrating power), of a rifle-bullet. Suppose them a million times smaller—yet as millions of millions of them must be supposed to enter the eye at once, coming from every point of the surface of every visible object, it seems impossible to reconcile such a hypothesis with the excessive delicacy of the organs of vision.

It is not pretended by the advocates of the rival hypothesis, the Undulatory Theory of Light, that they understand exactly the nature of the transference of energy on which they suppose light to depend; but they take from the analogy of sound in air, and of waves in water, the idea of the existence in all space of a highly elastic fluid (or quasi-solid), provisionally named the *Ether* (q.v.), and they suppose light to consist in the propagation of waves in this fluid. Huyghens has the credit of having propounded and ably developed and illustrated this theory.

As we have seen above, the general decision of investigators is that no third hypothesis as to the nature of light is admissible. Many strong arguments against the truth of the corpuscular theory had been furnished by experiment, especially in the early part of the 19th c.; and as they were always met by further and more extraordinary properties which had to be attributed to the luminous corpuscles, the theory had become fearfully complicated; and this of itself was an almost complete disproof. Still, it held its ground; for Newton's old objection to the rival theory—viz., that on the undulatory hypothesis there should be no shadows at all (witness the analogy of sounds heard round a corner)—remained unanswered. This difficulty was overcome by Young (q.v.), to whose sagacity we are indebted for the idea of *Interference* (q.v.), which completely explained the apparent discrepancy. But the question between the rival theories was finally settled by Fizeau and Foucault, who, by processes entirely different, but agreeing in their results, determined the velocity of light in air and in water.

Now, Newton had shown that refraction, such as that of light by water, if predicated of moving *particles*, requires that they should move faster in water than in air. Huyghens, again, had shown that, if such refraction be predicated of *waves*, they must move slower in water than in air. Fizeau and Foucault found, by direct measurement, that light moves slower in water than in air. Hence it is certain that *light consists in the transference of energy, not of matter;* and the Undulatory Theory is based on this fact.

But, as to the manner in which energy is thus transferred, we are entirely ignorant. The common assumption is, that waves of distortion are propagated in the ether: for the nature of this motion, see WAVE. But many other modes have been suggested, one of the most notable of which is that of Rankine. Here the particles of ether are not supposed to be *displaced*, but each is merely made to turn about an axis as the wave of light passes it; the particles having Polarity (q.v.), by virtue of which they arrange themselves in similar positions when no light is passing, and by which, also, any rotation of one particle produces a consequent rotation of those in its neighborhood. For explanation of most of the common phenomena of optics, it is quite indifferent which of these assumptions we make, and, indeed, theory has not yet been carried far enough to enable us to devise experimental methods of testing which is the more likely to represent the fact in nature. It cannot be too strongly insisted on that all at present known is, that light certainly depends on the transference of energy from one part of the luminiferous medium to another; what kind of energy is transferred, vibratory or oscillatory motion, or rotation, etc., is a problem which may possibly forever remain unsolved. But vibratory wave-motion being that with which we are most familiar, as in earthquakes, sound, waves in water, etc., we naturally choose this as the most easily intelligible basis of explanation and illustration. And we shall now briefly show how the laws of linear propagation, reflection, single refraction, interference, diffraction, dispersion, polarization, and double refraction may be accounted for.

We assume, then, that light consists in a succession of waves, and for our earlier inquiries it does not matter whether they be (like those of sound) waves of condensation and rarefaction, in which the vibrations take place *in* the direction of the ray, or (like those in water) waves of distortion or displacement without condensation, in which case the luminous vibrations must be assumed to take place in some direction *perpendicular* to the ray. The phenomena of polarization and double refraction show us that the former of these hypotheses is untenable.

Propagation of Light in a Uniform Isotropic Medium. (An isotropic medium is such that if a cubical portion be taken, it possesses precisely the same properties whatever be the directions of its sides. Glass and water are isotropic, rock-salt and ice are not.)—Suppose AB (fig. 1) to represent at any time the *front* of a plane wave which is passing in the direction CD—i.e., suppose all particles of the ether in the plane AB (perpendicular to the plane of the paper) to be similarly and equally displaced. According to Huyghens, we must suppose every particle, P, to be itself the source of a wave, which, from the uniformity of the medium, will spread with the same velocity in all directions. With centre P, and radius the space which light passes over in any assigned interval t, describe a sphere represented in section by a circle in the figure. Do the same for adjacent points, P_1, P_2, etc. Let p_1 be the intersection of the circles whose centres are P and P_1, p_2 that of the circles whose centres are P_1 and P_2, and so on. Then, as p_1 is *equidistant* from P and P_1 and (approximately) from all points of a small circular space between P and P_1 on the wave-front AB, all the separate wave-disturbances coming from these points to p_1 will be in the same *phase* (see WAVE), and will therefore combine so as to strengthen each other; while in other directions they will be in different phases, and combine to destroy each other. The locus of all such points as p_1, p_2, etc., will therefore, at the end of the time t, contain all particles of the ether equally and similarly disturbed, and will thus be the new wave-front. But it is obviously a plane parallel to AB. Also the disturbance at P has passed to p_1; and, when the distance PP_1 is taken as very small, Pp_1 is perpendicular to the wave-front AB. Hence, in such a medium, a plane wave remains plane, and moves with uniform velocity in a direction perpendicular to its front. [There is a difficulty as to what becomes of the disturbance, which, according to Huyghens's assumption, ought to travel *back* into the dotted portions of the spheres; and it is not easy to account for the absence of this on mechanical principles. But we are content here to take for granted that no waves are propagated backward from the main wave, as a fact clearly proved by experiment.] Since a small portion of the surface of any curved wave may be considered as plane, we now see how any such wave will be propagated in an isotropic medium. Erecting perpendiculars at every point of the surface of the curved wave, and laying off along these lines the space which light passes over in a given interval,

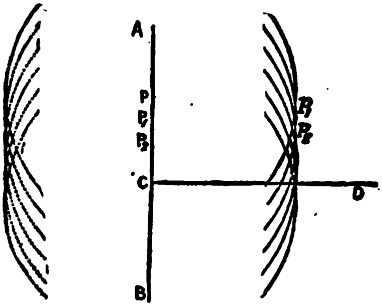


Fig. 1.

the extremities form a new surface, which is the wave-front after the lapse of that interval.

Reflection at a Plane Surface.—Suppose AB (fig. 2) to be a plane wave-front, moving in the direction Bb perpendicular to AB. Let Ab be the reflecting surface, and let the intersection of the plane of the wave-front with the reflecting surface be a line through A perpendicular to the paper. When B has arrived at b, A would have arrived at β, and P at q (where $b\beta$ is parallel to BA, and Pq and Aβ to Bb), had it not been for the reflecting surface.

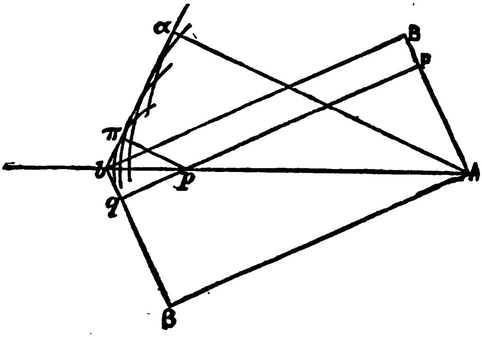


Fig. 2.

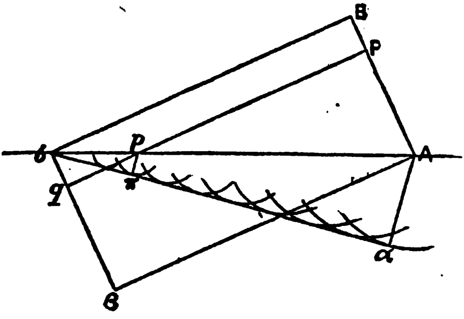


Fig. 3.

Hence, when B is at b, A has diverged into a sphere of radius Aβ, P from p into a sphere of radius pq; and so for each point of the wave-front. Now, the spheres so described about A and p as centres obviously touch the plane $b\beta$; consequently they touch the other plane $b\alpha$, which makes the angle A$b\alpha$ equal to A$b\beta$. Now, $b\pi\alpha$ is the front of the reflected wave, and Aα is the direction in which it is proceeding. Hence, obviously, the ordinary laws of reflection. See CATOPTRICS.

Refraction at a Plane Surface into an Isotropic Medium.—Here we take account of the change of velocity which light suffers in passing from one medium to another. In fig. 3, A, P, B, b, p, q, and β represent the same as before—but suppose Aα now to represent the space through which the wave travels in the second medium, while it would travel from B to b in the first. With centre A and radius Aα, describe a sphere. Let $b\alpha$ touch this sphere in α. Then $b\alpha$ is the front of the refracted wave. For, if $p\pi$ be drawn perpendicular to $b\alpha$, we have

$$p\pi : A\alpha :: bp : bA :: pq : A\beta.$$

Hence, while A travels to α, and B to b, P travels to p, and thence to π. And the sines of the angles BAb and A$b\alpha$, which are the angles of incidence and refraction, are to each other as Bb to Aα—i.e., as the velocity in the first medium is to that in the second. See DIOPTRICS.

It is obvious from the cut, that, the *less* is the velocity in the second medium, the more nearly does the refracted ray enter it at right angles to its surface. As a contrast, we introduce here a sketch of Newton's admirable investigation of the same problem on the corpuscular hypothesis. Let AB (fig. 4) be the common surface of the two media, PQR the path of a corpuscle. Let U and V be the velocities in the two media, α and β the angles of incidence and refraction. Then, the forces which act on the corpuscle being entirely perpendicular to the refracting surface, the velocity *parallel* to that surface is not altered. This gives

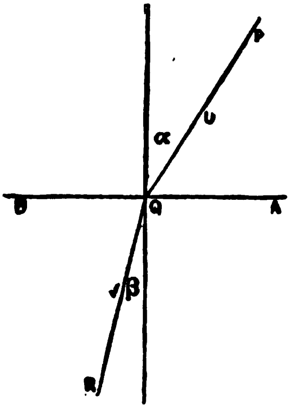


Fig. 4.

$$U \sin. \alpha = V \sin. \beta.$$

Also the kinetic energy is increased by the loss of potential energy in passing from the one medium to the other. Hence the square of V exceeds that of U by a quantity which depends only on the nature of the two media and of the corpuscle. This shows that V is the same whatever be the direction of the ray, and then the first relation proves that the sines of the angles of incidence and reflection are *inversely* as the velocities in the two media—i.e., the refracted ray is more nearly perpendicular to the refracting surface the *greater* is the velocity in the second medium. It is very singular that two theories so widely dissimilar should each give the true *law* of refraction; and, in connection with what has just been said, it may be mentioned that on the corpuscular theory a corpuscle passes from one point to another with the least *action*, while on the Undulatory Theory it passes in the least *time*. Hamilton's (q.v.) grand principle of *Varying Action* includes both of these.

Interference.—Fresnel's mode of exhibiting this phenomenon (whose discovery is due to Young) is very simple and striking. An isosceles prism of glass, with an angle very nearly 180°, is placed, as in fig. 5, symmetrically in front of a brilliant point (e.g., the image of the sun formed by a lens of very short focus). The effect of the prism is that light which passes from O through the portion QR appears to have come from some point such as A (the image of O as seen through the upper half of the prism). Similarly, the light which has passed through PQ appears to come from some point B. The light which has passed through the prism is to be received on a white screen ST. At the point T, which is in the prolongation of the line OQ, the distances TA and TB are equal; but for no other point, as U, in the line ST, are UA and UB equal. Suppose U and V to be such that UA and UB differ in length by half a wave-length of some particular color, VA and VB by a whole wave-length of the same; then waves arriving at T, as if from A and B, have passed over equal spaces; consequently their crests coincide, so that at T they reinforce each other. But at U a hollow from A is met by a crest from B, so that darkness is the result. At V, again, crest and crest coincide. And so on. Hence, if we are experimenting with one definite color of light, the effect on the screen is to produce at T, V, etc., bright bands of that color, all parallel to the edges of the prism PQR. At points like U there are dark bands. And the length of a wave can easily be calculated from this experiment; for the lengths of OQ and QT can be measured, and, knowing the angles of the prism and its refractive index (see **Refraction**) for the particular color employed, we can calculate the positions of A and B. We have then only to measure the dis-

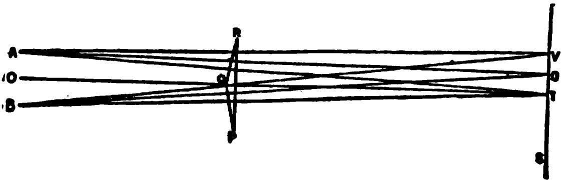


Fig. 5.

tance TV between the centres of the two adjoining bright bars, and then geometry enables us to calculate the difference of the lengths of VA and VB, which, as we have seen, is the length of a wave. The results of this experiment show how very minute are these wave-lengths for visible rays. Thus, for

	Inch.
Extreme Red, the wave-length in air is	0·0000266
" Violet, " " "	0·0000167

These are, roughly, the $\frac{1}{40000}$ and the $\frac{1}{60000}$ of an inch. Inasmuch, then, as light describes 200,000 m. per second, the number of waves which enter the eye per second are-

Extreme Red, . .	460 millions of millions.
" Violet, . .	780 " "

These numbers, compared with those of sonorous waves (see SOUND), show the extraordinary difference in delicacy between the optic and auditory nerves. But whereas the range of the ear is somewhere about 12 octaves, that of the eye is less than one.

Diffraction.—(See this title.)

Dispersion.—We have just now seen that, by Fresnel's interference experiment, waves of different lengths are separated (for in the last figure the position of the bright line V depends on the length of the waves which produce it). But the different colors also are separated by common refraction, as in Newton's celebrated experiment: see SPECTRUM. This shows, of course, that, in refracting media, waves of different colors move with different velocities; and, as the violet are more refracted than the red, it appears that the shorter waves move more slowly in glass or water than the longer ones. In free space, waves of all lengths travel with equal speed, else (see ABERRATION) all stars ought to appear drawn out into spectra, in consequence of the earth's annual motion. Also, a star suddenly breaking out, or suddenly vanishing (a phenomenon several times observed), should flash out first red, and gradually become white, or should gradually decay from white to violet—which is not observed to be the case. These facts are the most difficult to explain of any to which the Undulatory Theory has yet been applied. Fresnel, indeed, appears to have been in possession of a solution of the difficulty; but the Appendix to one of his papers, to which he more than once refers as containing this explanation, was not found among his MSS. Cauchy and others have, however, by delicate investigations, shown that, *if the forces exerted by the molecules of a refracting body on the ether are exerted through distances comparable with the length of a wave*, the velocity of light will then depend on the wave-length. The velocity is, in fact, shown to be represented by a formula such as this:

$$A - \frac{B}{\lambda^2},$$

where A and B are constant quantities for a given medium, and λ is the length of a wave. The larger λ is, the less is the second term of the formula, and therefore the velocity is the greater. A very singular result follows from this formula—viz., that the velocity becomes more and more nearly equal to A as the wave-length is greater. Hence waves of low radiant heat, which (see HEAT) are merely waves of light which are incapable of producing vision, must be crowded together toward a limit, not very far beyond the red end of the spectrum.

Polarization.—We now come to a set of phenomena which give further information as to the nature of luminiferous waves. When two beams of light, such as those in Fresnel's experiment, are polarized in planes perpendicular to each other (see POLARIZATION) before they meet, *they do not interfere*. This is in accordance with the assumption required for the explanation of the existence of polarization itself—viz., that the vibrations of the ether take place *transversely* to the direction of the ray.

Double Refraction.—Our assumptions, forced upon us by experimental results, are now so far complete that we may proceed, after Fresnel, to apply them to the explanation of double refraction: see POLARIZATION: REFRACTION, DOUBLE. This explanation is extremely beautiful, and when published was justly hailed as the greatest step in physical science which had been made since Newton deduced the facts of physical astronomy from the law of gravitation.

As we have seen above, in treating of simple reflection and refraction, that the form and velocity in and with which a disturbance spreads from any point of a wave are all that is required for determination of the course of a ray, we must endeavor to find the form in which a disturbance spreads in a double-refracting crystal; and this should lead us to a construction for each of the two rays.

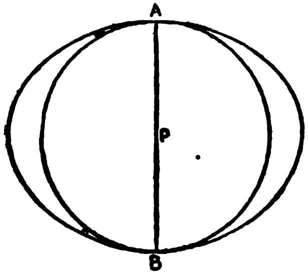


Fig. 6.

Huyghens had already pointed out that one of the two rays produced by Iceland-spar follows the ordinary law of refraction. Hence the disturbances which give rise to this ray are propagated in spherical waves in the crystal. He showed also that the other ray could be accounted for if the disturbances to which it is due were propagated in the form of an oblate spheroid touching the sphere with the extremities of its axis, that axis being parallel to the crystallographic axis of the mineral. The above diagram (fig. 6) will make this clear: P is the point where the ether is disturbed. Two waves spread from P in the form shown in the cut, the line APB being the axis of rotation of the spheroid, and parallel to the axis of the crystal. Thus, let rays αA, etc. (fig. 7), of which AB is the wave-front, fall upon the surface Ab of such a crystal; and let AC be the direction of its axis. Draw, about A as

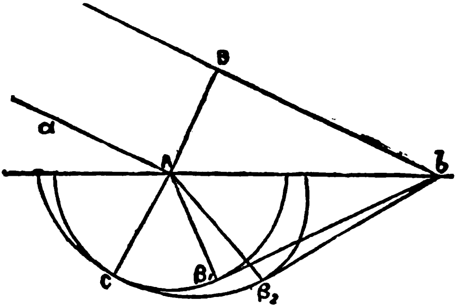


Fig. 7.

centre, the sphere and spheroid into which the disturbance at A spreads in the crystal while light in air passes from B to b. Then if planes be drawn through the line b (perpendicular to the paper) so as to touch the sphere in β_1 and the spheroid in β_2, these planes will touch respectively all the intermediate spheres and spheroids produced by disturbances at points between A and b. [This is evident from simple geometry.] Thus, $b\beta_1$ and $b\beta_2$ are the new wave-fronts; and the ray αA, falling on the crystal, is divided into the two Aβ_1 and Aβ_2. Of these, Aβ_1 is the ordinary ray, and, being produced by spherical waves, has all the properties of a ray ordinarily refracted. It obviously moves perpendicularly to its front, as Aβ_1 is perpendicular to $\beta_1 b$.

But it is otherwise with Aβ_2, which is, in general, *not perpendicular to its front, $\beta_2 b$*. Again, if AC, the axis of the crystal, be not in the plane of incidence, the ray Aβ_2 is not in that plane; so that here we have *refraction out of the plane of incidence.*

The exact accordance of this construction with observation was proved by the careful experiments of Wollaston. We have to add only that the two rays Aβ_1 and Aβ_2 are, in all cases, completely polarized in planes at right angles to each other.

The experiments of Brewster showed that in far the greater number of minerals and artificial crystals *both* rays are extraordinary—i.e., neither of them can be accounted for by disturbances propagated spherically in the crystal. But no tentative process could lead to the form of the wave-surface in this most general case. Here Fresnel's genius supplied the necessary construction.

He assumes that the ether in a crystallized body is possessed of different rigidity, or different inertia, in different directions—a supposition in itself extremely probable, from the mechanical and other properties of crystals. In the general case there are shown to be three principal directions in a crystal, in any one of which, if the ether be displaced, the resulting elastic force is in the direction of the displacement. Each of these is, in all cases, perpendicular to the others. Any given displacement of the ether corresponds to partial calculable displacements parallel to each of these lines; thus the elastic force consequent on any displacement whatever is known if we know those for the three rectangular directions. All the calculations are thus dependent on *three* numbers only, for each substance.

To find the form in which a disturbance will spread, Fresnel proceeds as follows: Let the plane of the paper represent the front of a wave in the crystal, and suppose a particle of ether to be displaced in it from A to B (fig. 8). This displacement may be resolved (by the law of the parallelogram of velocities, forces, etc.) into two components in any two directions in the plane of the paper. Assume AP to be one of these, and let PQ be the force produced by disturbing the particle of ether from A to P. In general, PQ will *not* lie in the plane of the paper. Let fall a perpendicular, QR, upon the plane of the paper. In general, the point R will not lie in AP. The portion RQ of the elastic force of the ether, Fresnel neglects, because it would produce vibrations perpendicular to the wave-front—i.e., *similar to those of sound*—and he assumes that such normal vibrations do not produce visible light. We shall recur to this point. Fresnel now assumes that the vibrations which will be propagated continuously in the crystal are such as have PR coincident in direction with AP; and then the rate of their propagation will depend on the ratio of PR to PA. He shows by mathematical reasoning that there are *two* such directions in every wave-front, and that they are always *perpendicular* to each other. This, of course, at once accounts for double refraction, the complete polarization of each of the two rays, and their being polarized in planes perpendicular to each other. The original plane wave is now broken into two, both parallel to the first, but in general moving at different rates. He next considers a disturbance at any point in a crystal as equivalent to waves having fronts in *every* plane passing through that point, and investigates mathematically the form of the surface which is touched by the planes of all the pairs of polarized rays which have (in any given time)

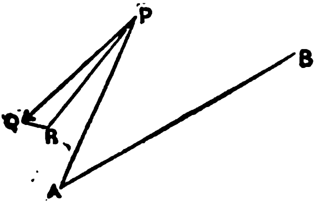


Fig. 8.

proceeded from each of those wave-fronts. The form of this surface is very remarkable: it is symmetrical with reference to three planes at right angles to each other. These, of course together, cut it into eight parts, one of which is figured below (fig. 9). From this it appears, though Fresnel did not perceive it, that the surface has four *conical cusps*, as they are called, the inner portion seeming to be drawn through a hole, as it were, and then spreading out again to form the outer portion: the external appearance of these points resembles the portion of an apple round the point of attachment of the stalk. Fresnel showed that, in particular cases, when two of the three principal elasticities are equal, this surface degenerates into the sphere and spheroid of Huyghens above described for Iceland-spar; and that, when all three are equal, it becomes a single sphere, as in glass, water, and other singly refracting bodies. All this, of course, is in complete accord with experiment. But there is vastly more. If we use the wave-surface of Fresnel to construct the refracted rays, just as we employed the sphere for simple refraction, or the sphere and spheroid for Iceland-spar, we find generally *two* definite refracted rays (both usually out of the plane of incidence) for one incident ray. But Hamilton (q.v.), the first to perceive the existence of the cusps above described, saw that they indicated the existence of a very remarkable phenomenon, to which he gave the name Conical Refraction (q.v.). The ray which, in the crystal, passes from A to C (the cusp—see last figure), has not, like other rays such as ApP, two definite wave-fronts. For if at p and P, where the line ApP meets the inner and outer portions of the wave-surface, we draw tangent planes, these are the definite fronts of the corresponding waves; so that such a ray will split into two only, on leaving the crystal. But AC intersects the surface at C, where it is *conical*, and has an *infinite* number of tangent planes; so that when it leaves the crystal it will split into an infinite number, forming a hollow cone. Hamilton's prediction then was: If a single ray of light be made to pass through a plate of a biaxal crystal in the direction AC (limiting it, for instance,

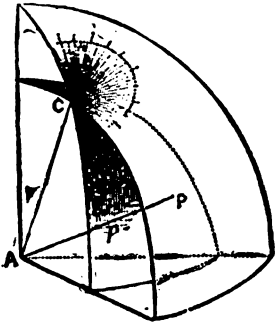


Fig. 9

by sheets of tinfoil with small holes in them properly fixed on each side), it will enter and emerge as a hollow cone. Also the plane of polarization will differ for different rays in this cone. Lloyd completely verified this wonderful prediction by experiments made with a plate of *Arragonite* (q.v.). But more, Hamilton observed that (see last figure) the wave-surface can be touched by a tangent plane in a circle surrounding the cusp. If, then, we make the construction of fig. 7 with Fresnel's wave instead of the sphere and spheroid, there will be a definite direction of the incident ray αA, for which the tangent planes $b\beta_1$ and $b\beta_2$ in that figure will coincide, and will touch the wave-surface in the circle about the cusp. Any line drawn from A to a point in that circle will be a direction for a refracted ray. Hence the ray αA will be broken up into a hollow cone of rays, the vertex of the cone being A, and its base this circle. If the crystal be cut into a plate, each ray will of course emerge parallel to αA, and the *ensemble* of them will form a hollow cylinder. The prediction then is that a single definite ray, falling in a given direction on such a plate of crystal, will emerge as a hollow cylinder. This, and the predicted laws of the polarization of the light of the cylinder, also were verified by Lloyd.

'The formulæ which led to such triumphantly successful predictions *may* have been deduced from incomplete or even erroneous premises; but they *represent a truth*, and must in time conduct us step by step back to ultimate proof of the truth of Fresnel's assumptions, and of the Undulatory Theory of Light, as now understood, or show us what modifications may be required in the original conceptions.'

It would unduly lengthen this article, and besides would lead us into discussions far too recondite for a work like this, to enter upon the question of whether the vibrations in polarized light are *perpendicular to* or *in* the plane of polarization—a subject recently well investigated by Stokes (q.v.); or to consider the production of elliptically polarized light by reflection at the surface of metals, diamond, etc.; and various other important points of the theory. We only mention that Green, Cauchy, Stokes, and others, who have entered deeply into the mechanical question of luminiferous vibrations, have found themselves obliged to take into account the *Normal* wave, which, as we have seen, Fresnel neglected.

Fluorescence (see PHOSPHORESCENCE), Spectrum Analysis (see SPECTRUM), and various other important recent additions to the theory can be merely mentioned; as also the very remarkable observation of Maxwell which appears to connect Light and Electricity, and was derived from a theory which assumes the ether to be the vehicle of Electricity and Magnetism as well as of Light and Heat, and by which it appears that the velocity of Light is expressible in terms of the static and kinetic units of Electricity (q.v.).

For some recent metaphysical and experimental suggestions opposed to the Undulatory Theory, see SUBSTANTIALISM.

For further information, the general reader may consult Lloyd's *Wave-theory*, an excellent elementary treatise: while the mathematician may consult Airy's *Tract on the Undulatory Theory;* and Herschel's article 'Light' in *Encyclopædia Metropolitana.*

UNDULY: see under UNDUE.

UNDUTIFUL, a. *ŭn-dū'tĭ-fŭl:* not obedient; wanting in respect and duty. UNDU'TIFULLY, ad. UNDU'TIFULNESS, n. want of respect; disobedience. UNDU'TEOUS, a. *-t'yus,* in *OE.*, not performing one's duty; disobedient.

UNDY, a. *ŭn'dĭ* [from L. *unda,* a wave]: in *her.*, wavy: see HERALDRY.

UNDYING, a. *ŭn-dī'ĭng:* not subject to death; not perishing; enduring; immortal.

UNEARNED, a. *ŭn-ėrnd':* not earned or obtained by labor or merit.

UNEARNED'-IN'CREMENT: in *polit. econ.*, the increase in the value of land produced without labor or expenditure on the part of the owner—e.g., by the growth of a town in its vicinity. John Stuart Mill and his followers contend that this increment should belong to the nation.

UNEARTH, v. *ŭn-ėrth':* to drive from the earth or from a burrow; to uncover; to expose. UNEARTHED', a. *-ėrtht'*, driven from the earth or from a den or burrow; freed from the cover of earth, as roots; discovered or exposed to view. UNEARTH'LY, a. not of earth; supernatural.

UNEASY, a. *ŭn-ē'zĭ:* restless; disturbed; constrained; disagreeable; feeling some degree of pain or discomfort. UNEA'SILY, ad. with a certain degree of pain. UNEA'SINESS, n. restlessness; disquietude.—SYN. of 'uneasy': painful; disturbed; constraining; cramping; constrained; awkward; stiff; peevish; difficult.

UNEATH, ad. *ŭn-ēth'* [see EATH]: in *OE.*, not easily; scarcely: ADJ. in *OE.*, uneasy; difficult.

UNEBBING, pp. *ŭn-ĕb'bĭng:* not receding, as the ebb of the tide.

UNEDIFYING, a. *ŭn-ĕd'ĭ-fī-ĭng:* not edifying or improving to the mind. UNED'IFIED, a. not improved or instructed in mind or disposition.

UNEDUCATED, a. *ŭn-ĕd'ū-kā-tĕd:* illiterate; ignorant.

UNEFFACED, a. *ŭn'ĕf-fāst':* not effaced, as from the mind; not obliterated or destroyed, as a writing or a figure on the surface of a thing.

UNEFFECTUAL, a. *ŭn'ĕf-fĕk'tū-ăl:* ineffectual.

UNELECTED, a. *ŭn'ē-lĕk'tĕd:* not chosen; not preferred.

UNEMBARRASSED, a. *ŭn'ĕm-băr'răst:* not perplexed or confused in mind or deportment; free from pecuniary difficulties or incumbrances.

UNEMBITTERED, a. *ŭn'ĕm-bĭt'tĕrd:* not rendered distressing; not exasperated.

UNEMBODIED, a. *ŭn'ĕm-bŏd'ĭd:* free from a corporeal body; not collected or formed into a body, as troops.

UNEMOTIONAL, a. *ŭn'ĕ-mō'shŭn-ăl:* not subject to emotion.

UNEMPHATIC, a. *ŭn'ĕm-făt'ĭk:* not characterized by emphasis or expressiveness. **Un'emphat'ically**, ad. without energy or emphasis.

UNEMPLOYED, a. *ŭn'ĕm-ployd':* not occupied; without employment; at leisure; not engaged in work; not in use.

UNEMPOWERED, a. *ŭn'ĕm-pow'rd:* not empowered or authorized.

UNENCUMBERED, a. *ŭn'ĕn-kŭm'bėrd:* not encumbered or burdened, as an estate by mortgages, annuitants, debts, etc.

UNENDING, a. *ŭn-ĕnd'ĭng:* not coming to an end; not terminating; everlasting.

UNENDOWED, a. *ŭn'ĕn-dowd':* not endowed, as with talent; not supplied with a permanent fund.

UNENDURABLE, a. *ŭn'ĕn-dū'ră-bl:* not to be endured; intolerable.

UNENGAGED, a. *ŭn'ĕn-gājd':* not bound by promise, as to marry; free from obligation; not occupied. **Un'enga'ging**, a. not adapted to win the affections; not inviting.

UNENGLISH, a. *ŭn-ĭng'glĭsh:* not according to English character in speech or action.

UNENJOYED, a. *ŭn'ĕn-joyd':* not obtained or enjoyed; not possessed with satisfaction.

UNENLARGED, a. *ŭn'ĕn-lârjd':* not increased in bulk or extent.

UNENLIGHTENED, a. *ŭn'ĕn-līt'nd:* not enlightened.

UNENLIVENED, a. *ŭn'ĕn-lĭv'nd:* not enlivened or animated.

UNENSLAVED, a. *ŭn'ĕn-slāvd':* not in bondage; free.

UNENTANGLED, a. *ŭn'ĕn-tăng'gld:* not entangled; not confused or disordered; not involved; not complicated.

UNENTERTAINING, a. *ŭn-ĕn'tĕr-tān'ĭng:* not entertaining or amusing.

UNENTHRALLED, a. *ŭn'ĕn-thrawld':* not enslaved or reduced to thraldom.

UNENVIABLE, a. *ŭn-ĕn'vĭ-ă-bl:* not capable of exciting envy; not desirable; wretched or embarrassing, as an *unenviable* position. **Unen'vied**, a. exempt from the envy of others. **Unen'vious**, a. free from envy.

UNEQUABLE, a. *ŭn-ĕk'wă-bl:* different at different times; not uniform.

UNEQUAL, a. *ŭn-ē'kwŏl:* not even; not of the same size, age, etc.; inferior; inadequate; insufficient; ill-proportioned; ill-matched; not regular or uniform; in *OE.*, unjust. **Une'qualled**, a. unparalleled; unrivalled. **Une'qually**, ad. in different degrees; in *OE.*, unjustly.

UNEQUIVOCAL, a. *ŭn'ĕ-kwĭv'ō-kăl:* not doubtful; clear; evident; not of doubtful signification. UN'EQUIV'OCALLY, ad. UN'EQUIV'OCALNESS, n. the state of being unequivocal.

UNERRING, a. *ŭn-ėr'rĭng:* committing no mistake; incapable of error; certain; sure. UNER'RINGLY, ad. in an unerring manner; without mistake.

UNESPIED, pp. *ŭn'ĕs-pīd':* not seen; undiscovered; undescried.

UNESSAYED, a. *ŭn'ĕs-sād':* unattempted.

UNESSENTIAL, a. *ŭn'ĕs-sĕn'shăl:* not absolutely necessary; not necessary to the existence of a thing; unimportant.

UNEVANGELICAL, a. *ŭn'ē-văn-jĕl'ĭ-kăl:* not according to the gospel as interpreted by different sects, or by a party in a church.

UNEVAPORATED, a. *ŭn'ĕ-văp'ō-rā-tĕd:* that has not passed off in vapor; not dissipated.

UNEVEN, a. *ŭn-ē'vn:* not even or level; not uniform, as temper; not of equal length; in *OE.*, incongruous; unsuitable; troublesome. UNE'VENLY, ad. UNE'VENNESS, n. the state of not being level; want of uniformity or levelness.

UNEXAGGERATED, a. *ŭn'ĕgz-ăj'ėr-ā-tĕd:* not enlarged beyond the truth.

UNEXALTED, a. *ŭn'ĕgz-awl'tĕd:* not raised high; not elevated in power.

UNEXAMINED, a. *ŭn'ĕgz-ăm'ĭnd:* not inquired into or investigated; not interrogated.

UNEXAMPLED, a. *ŭn'ĕgz-ăm'pld:* having no example or similar case; unprecedented.

UNEXCELLED, a. *ŭn'ĕk-sĕld':* not excelled or surpassed.

UNEXCEPTIONABLE, a. *ŭn'ĕk-sĕp'shŭn-ă-bl:* not liable to any exception; unobjectionable.

UNEXCITED, a. *ŭn'ĕk-sī'tĕd:* not roused or stirred up.

UNEXCLUDED, a. *ŭn'ĕks-klô'dĕd:* not hindered; not debarred.

UNEXECUTED, a. *ŭn-ĕks'ĕ-kū-tĕd:* not performed; not signed or sealed, as a deed.

UNEXEMPLIFIED, a. *ŭn'ĕgz-ĕm'plĭ-fīd:* not illustrated by example.

UNEXERCISED, a. *ŭn-ĕks'ėr-sīzd:* not exercised; not practiced; not disciplined.

UNEXERTED, a. *ŭn'ĕgz-ėr'tĕd:* not called into action; not enforced.

UNEXHAUSTED, a. *ŭn'ĕgz-awst'ĕd:* not all used or spent.

UNEXPECTED, a. *ŭn'ĕks-pĕk'tĕd:* not looked for; sudden; taken by surprise. **UN'EXPEC'TEDLY**, ad. at a time or in a manner not looked for; suddenly. **UN'EXPEC'TEDNESS**, n. the quality of being unexpected. **UN'EXPEC'TANT**, a. not expectant.

UNEXPIRED, a. *ŭn'ĕks-pīrd':* not ended; that has not come to an end through lapse of time; still in existence or force.

UNEXPLAINABLE, a. *ŭn'ĕks-plān'ă-bl:* not capable of being made plain to the understanding; inexplicable. **UN'EXPLAINED'**, a. not made plain or intelligible.

UNEXPLORED, a. *ŭn'ĕks-plōrd':* not searched out or examined; unknown.

UNEXPLOSIVE, a. *ŭn'ĕks-plō'sĭv:* not explosive.

UNEXPORTED, a. *ŭn'ĕks-pōrt'ĕd:* not sent out of a country.

UNEXPOSED, a. *ŭn'ĕks-pōzd':* not laid open to view; concealed.

UNEXPOUNDED, a. *ŭn'ĕks-pownd'ĕd:* not explained or interpreted.

UNEXPRESSED, a. *ŭn'ĕks-prĕst':* not expressed or put in words; not mentioned or named. **UN'EXPRES'SIVE**, a. not representing with force; not emphatic; in *OE.*, unutterable; ineffable.

UNEXPUNGED, a. *ŭn'ĕks-pŭnjd':* not expunged or blotted out; not obliterated.

UNEXTENDED, a. *ŭn'ĕks-tĕnd'ĕd:* having no dimensions; occupying no assignable space.

UNEXTINGUISHABLE, a. *ŭn'ĕks-tĭng'gwĭsh-ă-bl:* that cannot be extinguished; that cannot be quenched. **UN'EXTIN'GUISHED**, a. not quenched; not entirely repressed.

UNEXTORTED, a. *ŭn'ĕks-tōrt'ĕd:* spontaneous; not drawn out by force or compulsion.

UNFABLED, a. *ŭn-fā'bld:* not fictitious; real; true.

UNFADED, a. *ŭn-fā'dĕd:* not having lost its strength or color; not withered. **UNFA'DING**, a. not liable to lose its freshness; not transient; not liable to wither. **UNFA'DINGNESS**, n. the quality of being unfading.

UNFAILING, a. *ŭn-fāl'ĭng:* not liable to fail; not capable of being exhausted; certain. **UNFAIL'INGLY**, ad.

UNFAIR, a. *ŭn-fār':* not impartial; using trick or artifice; trickish; dishonest; not just. **UNFAIR'LY**, ad. not in a just manner. **UNFAIR'NESS**, n. dishonesty of conduct or practice; the state or quality of being not honorable or candid in one's dealings; injustice.

UNFAITHFUL, a. *ŭn-fāth'fŭl:* inconstant; not observant of promises; violating trust or confidence; negligent of duty; in *OE.*, impious; infidel. **UNFAITH'FULLY**, ad. **UNFAITH'FULNESS**, n. neglect or violation of vows or promises; breach of confidence or trust reposed; in *OE.*, impiety.

UNFALTERING, a. *ŭn-fawl'tėr-ĭng:* not failing; not hesitating.

UNFAMILIAR, a. *ŭn'fă-mĭl'yėr:* not rendered agreeable by frequent use; not accustomed; not known or acquainted with. Un'famil'iar'ity, n. the state of being unfamiliar.

UNFASHIONABLE, a. *ŭn-făsh'ŭn-ă-bl:* not according to the prevailing mode; not regulating dress, etc., according to the reigning custom. Unfash'ionableness, n. neglect of the prevailing mode. Unfash'ionably, ad.

UNFASHIONED, a. *ŭn-făsh'ŭnd:* not fashioned or modified by art; not having a regular form.

UNFASTEN, v. *ŭn-făs'n:* to loose; to unbind; to untie; undo the fastenings of. Unfast'ened, pp. loosed; untied.

UNFATHERED, a. *ŭn-fâth'ėrd:* having no father. Unfath'erly, a. unkind; not becoming a father.

UNFATHOMABLE, a. *ŭn-făth'ŭm-ă-bl:* that cannot be fathomed or sounded by line; too deep for measuring. Unfath'omably, ad. Unfath'omed, a. that has not been fathomed; exceedingly deep.

UNFAVORABLE, a. *ŭn-fā'vėr-ă-bl:* not disposed to countenance; not kind or obliging; not propitious; discouraging; in *OE.*, ill-looking. Unfa'vorably, ad. Unfa'vorableness, n. the quality of being unfavorable; want of disposition to countenance or support. Unfa'vored, a. not favored or assisted.

UNFEARED, a. *ŭn-fērd':* not feared or dreaded.

UNFEASIBLE, a. *ŭn-fē'zĭ-bl:* impracticable.

UNFEATHERED, a. *ŭn-fĕth'ėrd:* having no feathers; unfledged.

UNFEED, a. *ŭn-fēd'* [*un*, and *fee*]: not having received a fee; unpaid.

UNFEELING, a. *ŭn-fēl'ĭng:* void of sensibility; cruel; callous. Unfeel'ingly, ad. Unfeel'ingness, n.

UNFEIGNED, a. *ŭn-fānd'* or *ŭn-fān'ĕd:* not counterfeit; real; sincere. Unfeign'edly, ad. without hypocrisy; sincerely.

UNFELT, a. *ŭn-fĕlt':* not felt; not perceived.

UNFEMININE, a. *ŭn-fĕm'ĭ-nĭn:* not according to the female character or manners.

UNFENCED, a. *ŭn-fĕnst':* uninclosed by a fence.

UNFERMENTED, a. *ŭn'fėr-mĕnt'ĕd:* that has not undergone the process of fermentation; unleavened.—Unfermented bread, bread made without yeast or other fermentative. The dietetic advantages of the form of unfermented bread known as aërated bread are considered to be its perfect cleanness and purity, its light and uniform texture, and its sweet and agreeable flavor; also the fact that it retains much of the ingredients of the wheat which enter into the formation of blood and muscle, and are allowed to escape in fermented bread. It is recommended for ordinary diet, particularly in cases of indigestion, flatulence, etc.—See Aërated Bread.

UNFETTER, v. *ŭn-fĕt'tėr:* to loose from fetters or bonds; to free from restraint. Unfet'tered, pp.: Adj. free from restraint.

UNFIGURED, a. *ŭn-fĭg'ŭrd:* plain; not covered or adorned with figures.

UNFILIAL, a. *ŭn-fĭl'ĭ-ăl:* undutiful; not becoming a child.

UNFILLED, a. *ŭn-fĭld':* not filled; not fully supplied.

UNFINISHED, a. *ŭn-fĭn'ĭsht:* not complete; not brought to an end; wanting the last touch.

UNFIT, a. *ŭn-fĭt':* unsuitable; unqualified; unworthy; incompetent: V. to disable; to disqualify. Unfit'ting, imp.: Adj. disqualifying; unbecoming; improper. Unfit'ted, pp. disqualified; rendered unsuitable. Unfit'ly, ad. Unfit'ness, n. want of suitable powers or qualifications; want of propriety or adaptation to character or place.

UNFIX, v. *ŭn-fĭks':* to remove, as a bond or fastening; to loose from that which fastens; to unsettle. Unfix'ing, imp. Unfixed', pp.: Adj. wandering; inconstant; having no settled object. Unfix'edness, n. the state of being unfixed or unsettled.

UNFLAGGING, a. *ŭn-flăg'gĭng:* not drooping; maintaining strength or spirit.

UNFLATTERING, a. *ŭn-flăt'tėr-ĭng:* not concealing the truth; not gratifying with obsequious behavior.

UNFLEDGED, a. *ŭn-flĕjd':* not yet furnished with feathers; not having attained to full growth.

UNFLESHED, a. *ŭn-flĕsht':* not seasoned to blood; untried.

UNFLINCHING, a. *ŭn-flĭnsh'ĭng:* not shrinking; resolute.

UNFOILED, a. *ŭn-foyld':* not vanquished.

UNFOLD, v. *ŭn-fōld':* to expand; to open; to spread out; to lay open to view; to disclose; to reveal. Unfold'ing, imp.: N. the act of expanding or disclosing. Unfold'ed, pp.

UNFOLD, v. *ŭn-fōld':* to set free from a fold, as sheep.

UNFORBIDDEN, a. *ŭn'fŏr-bĭd'n:* not prohibited; allowed.

UNFORCED, a. *ŭn-fōrst':* not constrained; not urged or impelled; not feigned; natural; not violent.

UNFORESEEN, a. *ŭn'fōr-sēn':* not seen or known beforehand.

UNFORETOLD, a. *ŭn'fōr-tōld':* not predicted.

UNFOREWARNED, a. *ŭn'fōr-wawrnd':* not previously warned or admonished.

UNFORGETFUL, a. *ŭn'fŏr-gĕt'fŭl:* not forgetful.

UNFORGIVEN, a. *ŭn'fŏr-gĭv'n:* not pardoned. Unforgiv'ing, a. not disposed to overlook or pardon offenses· implacable.

UNFORGOTTEN, a. *ŭn'fŏr-gŏt'n*, or Un'forgot', a. *-gŏt':* not lost to memory; not overlooked.

UNFORMED, a. *ŭn-fawrmd':* not modified or molded into regular shape.

UNFORSAKEN, a. *ŭn'fŏr-sā'kn:* not deserted; not entirely neglected.

UNFORTIFIED, a. *ŭn-fŏr'tĭ-fīd:* not secured from attack by walls and defenses; not guarded; defenseless.

UNFORTUNATE, a. *ŭn-fŏr'tū-nāt:* not successful; not prosperous. Unfor'tunately, ad. without success; unhappily; unluckily.

UNFOSSILIZED, a. *ŭn-fŏs'sĭl-īzd:* not converted into stone.

UNFOUGHT, a. *ŭn-fawt':* not contended or contested, as a battle.

UNFOUND, a. *ŭn-fownd':* not found; not met with.

UNFOUNDED, a. *ŭn-fownd'ĕd:* not founded; having no foundation; vain; idle.

UNFRAGRANT, a. *ŭn-frā'grănt:* not sweet-smelling.

UNFRAMED, a. *ŭn-frāmd':* not formed.

UNFRANCHISED, a. *ŭn-frăn'chīzd:* having no franchise; disfranchised.

UNFRAUGHT, a. *ŭn-frawt':* not freighted; not filled or stored.

UNFREED, a. *ŭn-frēd':* not liberated.

UNFREIGHTED, a. *ŭn-frāt'ĕd:* not loaded, as a ship.

UNFREQUENT, a. *ŭn-frē'kwĕnt:* not common; infrequent. Un'frequent'ed, a. rarely visited; seldom resorted to; solitary.

UNFRIENDED, a. *ŭn-frĕnd'ĕd:* wanting friends. Unfriend'ly, a. not kind; not favorable. Unfriend'liness, n. want of kindness.

UNFROCK, v. *ŭn-frŏk':* to disrobe; to divest of a frock; to degrade, as a clergyman from his office.

UNFROZEN, a. *ŭn-frō'zn:* not frozen.

UNFRUGAL, a. *ŭn-frō'găl:* not saving or economical.

UNFRUITFUL, a. *ŭn-frôt'fûl:* not producing fruit; unproductive; barren; vain. Unfruit'fully, ad. Unfruit'fulness, n. barrenness; unproductiveness.

UNFULFILLED, a. *ŭn'fûl-fĭld':* not accomplished.

UNFUMED, a. *ŭn-fūmd':* not fumigated; in *OE.*, not exhaling smoke, as in fumigation.

UNFUNDED, a. *ŭn-fŭnd'ĕd:* having no permanent fund for the payment of interest; floating. Unfunded debt, floating debt, consisting of bills, notes, and other obligations of varying amounts, and due at different times (see Fund).

UNFURL, v. *ŭn-fĕrl':* to loose and unfold; to expand. Unfur'ling, imp. unfolding. Unfurled', pp. unfolded; expanded.

UNFURNISHED, a. *ŭn-fĕr'nĭsht:* not supplied with furniture; empty; unsupplied.

UNGAINLY, a. *ŭn-gān'lĭ* [L. *un*, not; Scot. *gane*, to suffice, to be fit; *ganand*, fit or becoming: Icel. *gegn*, convenient, suitable: comp. Gael. *geanail*, comely, cheerful]: not expert or dexterous; clumsy; awkward; uncouth. Ungain'liness, n. clumsiness.

UNGALLANT, a. *ŭn-găl'lănt:* discourteous; rude. Ungal'lantly, ad.

UNGALLED, a. *ŭn-gawld':* unhurt; unwounded.

UNGARNISHED, a. *ŭn-găr'nĭsht:* not garnished or furnished; unadorned.

UNGARRISONED, a. *ŭn-găr'rĭ-sŭnd:* not furnished with troops for defense.

UNGARTERED, a. *ŭn-găr'tėrd:* without garters.

UNGATHERED, a. *ŭn-găth'ėrd:* not collected; not picked or plucked.

UNGENERATED, a. *ŭn-jĕn'ėr-ā-tĕd:* unbegotten; having no beginning. Ungen'erative, a. *-ėr-ā-tĭv*, in *OE.*, begetting nothing.

UNGENEROUS, a. *ŭn-jĕn'ėr-ŭs:* lacking in or destitute of generosity or liberality; illiberal; not magnanimous. Ungen'erously, ad. unkindly; dishonorably.

UNGENIAL, a. *ŭn-jē'nĭ-ăl:* not favorable to natural growth.

UNGENTEEL, a. *ŭn'jĕn-tēl':* not consistent with polite manners or good breeding. Un'genteel'ly, ad.

UNGENTLE, a. *ŭn-jĕn'tl:* harsh; rude. Ungent'ly, ad. harshly. Ungen'tleness, n. harshness; rudeness; unkindness; incivility.

UNGENTLEMANLY, a. *ŭn-jĕn'tl-măn-lĭ*, or Ungen'tlemanlike, a. *-măn-līk:* not befitting a gentleman. Ungen'tlemanliness, n. the quality of being unlike a gentleman.

UNGEOMETRICAL, a. *ŭn'jē-ō-mĕt'rĭ-kăl:* not agreeable to the rules of geometry.

UNGIFTED, a. *ŭn-gĭft'ĕd:* not endowed with peculiar faculties.

UNGILDED, a. *ŭn-gĭld'ĕd*, or Ungilt', a. *-gĭlt':* not overlaid with gilding.

UNGIRD, v. *ŭn-gėrd':* to loose from a girdle or band; to unbind. Ungird'ing, imp. Ungird'ed, pp., or Ungirt', pp.: Adj. loosely dressed.

UNGLADDENED, a. *ŭn-glăd'nd:* not made glad or cheered.

UNGLAZED, a. *ŭn-glāzd':* not furnished with glass, as *unglazed* windows; not coated with a glaze or glazing, as *unglazed* pottery.

UNGLORIFIED, a. *ŭn-glō'rĭ-fīd:* not exalted with praise and adoration.

UNGLOVE, v. *ŭn-glŭv':* to remove the glove from; to uncover the hand by removing the glove.

UNGODLY, a. *ŭn-gŏd'lĭ:* wicked; impious; neglecting the worship of God. **Ungod'liness**, n. disregard of God and His commands.

UNGORED, a. *ŭn-gōrd':* not gored; unwounded; unhurt by horn or spear.

UNGORGED, a. *ŭn-gŏrjd':* not filled; not sated.

UNGOT, a. *ŭn-gŏt'*, or **Ungotten**, pp. *ŭn-gŏt'n:* not acquired; in *OE.*, not begotten.

UNGOVERNABLE, a. *ŭn-gŭv'ėrn-ă-bl:* that cannot be governed or restrained; unruly. **Ungov'ernably**, ad. **Ungov'ernableness**, n. the quality of not being able to be restrained; unruliness. **Ungov'erned**, a. not subjected to laws or principles; not restrained or regulated.

UNGRACED, a. *ŭn-grāst':* not embellished or dignified; not honored. **Ungrace'ful**, a. not marked with ease and dignity; wanting beauty and elegance, as manner. **Ungrace'fully**, ad. awkwardly; inelegantly. **Ungrace'fulness**, n. want of ease or dignity; awkwardness.

UNGRACIOUS, a. *ŭn-grā'shŭs:* offensive; unpleasing; odious; hateful. **Ungra'ciously**, ad.

UNGRAMMATICAL, a. *ŭn'grăm-măt'ĭ-kăl:* not in accordance with the rules of grammar. **Un'grammat'ically**, ad.

UNGRANTED, a. *ŭn-grănt'ĕd:* not conceded; not bestowed or conferred.

UNGRATEFUL, a. *ŭn-grāt'fûl:* not thankful or showing gratitude, as for favors conferred or kindness shown; not agreeable; unpleasing, as sounds or speech. **Ungrate'fully**, ad. **Ungrate'fulness**, n. the state of being ungrateful for favors received; ill return for a kindness; unpleasantness.

UNGRATIFIED, a. *ŭn-grăt'ĭ-fīd:* not pleased or satisfied; not indulged.

UNGRAVELY, ad. *ŭn-grāv'lĭ:* without seriousness.

UNGROUNDED, a. *ŭn-grownd'ĕd:* having no foundation or support; unfounded; false.

UNGRUDGED, a. *ŭn-grŭjd':* given willingly. **Ungrudg'ing**, a. freely giving. **Ungrudg'ingly**, ad.

UNGUAL, a. *ŭng'gwăl* [L. *unguis*, a nail, a claw]: pertaining to, of the nature of, or shaped like a nail, claw, or hoof; having a nail, claw, or hoof attached. **Un'guical**, a. *-gwĭ-kăl*, pertaining to or like a claw. **Unguic'ular**, a. *-gwĭk'ū-lėr*, formed as a nail or claw. **Unguic'ulate**, a. *-lāt*, or **Unguic'ulated**, a. *-lā-tĕd*, having claws; in *bot.*, applied to petals which have an unguis or stalk. **Unguiform**, a. *ŭng'gwĭ-fawrm* [L. *forma*, shape]: claw-shaped. **Un'guis**, n. *-gwĭs*, **Un'gues**, n. plu. *-gwēz* [L.]: a claw; in *bot.*, the narrowed part of the base of a petal.

UNGUARDED, a. *ŭn-gârd'ĕd:* not watched; not defended; not attentive to danger; not cautious; inconsiderate **Unguard'edly**, ad. **Unguard'edness**, n. the state of being unguarded.

UNGUENT, n. *ŭng'gwĕnt* [L. *unguentum*, an ointment, a perfume—from *ungo*, I besmear: F. *onguent:* It. *unguento:* comp. Gael. *ung*, to anoint]: a soft composition used externally for the cure of sores, burns, and the like; an ointment. UN'GUENTARY, a. *-gwĕn-tėr-ĭ*, or UNGUENT'OUS, a. *-gwĕnt'ŭs*, partaking of the qualities of an unguent.—*Unguents* or ointments consist of some active agent in solution, or in the form of a soft extract, or in fine powder, carefully rubbed up with some fatty matter or mixture of several such matters, e.g., prepared lard, prepared suet, white wax, yellow wax, olive-oil, and almond-oil. There are many ointments enumerated in the *Pharmacopœia.* Some, e.g., ointments of aconitia, atropia, and belladonna, are employed to allay neuralgia and local pains; simple ointments (consisting of white wax, prepared lard, and almond-oil) are employed in dressing raw and blistered surfaces; ointments of cantharides and of savin are used to keep up the discharge from issues or blistered surfaces; ointments of creosote, galls, carbonate of lead, oxide of zinc, etc., serve as astringents; ointments of ammoniated mercury, calomel, nitrate and red iodide of mercury, iodine, iodide of potassium, elemi, resin, and turpentine, act as astringents of varying power; and ointment of red oxide of mercury as a mild caustic. Many of the ointments are of special service in skin-diseases, and sulphur ointment is the specific application for itch.

UNGUESSED, a. *ŭn-gĕst':* not reached by conjecture; unsuspected.

UNGUICAL, UNGUICULAR, UNGUICULATE, UNGUIS, etc.: see under UNGUAL.

UNGUICULATA, *ŭn-gwĭk-ū-lā'ta*, in Zoology: a section of the class Mammalia, consisting of animals which have toes furnished with nails or claws. In the system of Linnæus, it includes the orders *Bruta*, *Glires*, *Primates*, and *Feræ;* in that of Cuvier, the orders *Bimana*, *Quadrumana*, *Carnaria*, *Marsupialia*, *Rodentia*, and *Edentata*. See UNGUAL.

UNGUIDED, a. *ŭn-gī'dĕd:* not guided or directed; not regulated.

UNGUILTY, a. *ŭn-gĭl'tĭ:* not guilty; innocent.

UNGULA, a. *ŭng'gū-lă* [L. *ungŭla*, a hoof—from *unguis*, a claw]: a hoof; a hoof-shaped section of a cylinder, cone, or the like, cut off by a plane oblique to the base. UN'GULATE, a. *-lāt*, or UN'GULATED, a. *-lā-tĕd*, hoof-shaped; having the digits inclosed in hoofs. UNGULATA, n. plu. *ŭng'gū-lā'tă*, or UN'GULATES, *-lāts*, the order of mammals which includes the hoofed quadrupeds, classed as *Perissodactyla* and *Artiodactyla* (see these titles: also FOOT: PACHYDERMATA: ZOOLOGY). UN'GULOUS, a. *-lŭs*, pertaining to or resembling a hoof. UN'GULITE-GRIT, *-lĭt-grĭt* [L. *ungŭla*, a hoof; Eng. *grit*]: in *geol.*, a series of greenish-colored shales and grits occurring near St. Petersburg, so called because their prevailing shell is the *obolus* or *ungula*, a nail-shaped brachiopod.

UNGULED, *ŭng'gūld,* in Heraldry: having hoofs of a tincture different from that of the rest of the bearing.

UNGVAR, or **Unghvar,** *ông'vâr* or *ông-vâr':* important market-town in n.e. Hungary, charmingly situated on the river Ungh, 90 m. n.n.e. of Debreczin. It is the seat of a bp., and has a very old castle, a beautiful church, a seminary and gymnasium. Trade is carried on in salt, cattle, and particularly wine, vines being extensively cultivated in the vicinity. Pop. (1880) 11,373.—U. is also the name of a county or district; about 1,200 sq. m. (pop. 130,000).—Pop. of town (1886) 13,460.

UNHABITABLE, a. *ŭn-hăb'ĭ-tă-bl:* in *OE.*, that cannot be dwelt in; not fit for abode; uninhabitable.

UNHABITUATED, a. *ŭn'hă-bĭt'ū-ā-tĕd:* not accustomed.

UNHACKED, a. *ŭn-hăkt':* not notched or hacked; not hewn.

UNHACKNEYED, a. *ŭn-hăk'nĭd:* not hackneyed; not worn by use and repetition.

UNHALLOWED, a. *ŭn-hăl'lōd:* profane; unholy; impure.

UNHAND, v. *ŭn-hănd':* to loose from the hand; to let go.

UNHANDLED, a. *ŭn-hăn'dld:* not touched; not treated or discoursed on.

UNHANDSOME, a. *ŭn-hănd'sŭm:* awkward; unmanageable; inconvenient; not beautiful; ungraceful; hence, unbecoming; uncivil; illiberal; unfair. **Unhand'somely,** ad. ungracefully; inelegantly; illiberally. **Unhand'someness,** n. want of beauty and elegance; unfairness; incivility; illiberalness.

UNHANDY, a. *ŭn-hăn'dĭ:* not skilful and ready in the use of the hands; awkward; not convenient. **Unhan'dily,** ad. awkwardly; clumsily. **Unhan'diness,** n. want of dexterity; awkwardness.

UNHANG, a. *ŭn-hăng':* to divest of hangings, as a room; to take from the hinges, as a door. **Unhanged',** or **Unhung',** a. not put to death by hanging.

UNHAPPY, a. *ŭn-hăp'pĭ:* not happy; more or less miserable or wretched; unfortunate; bringing ill fortune; wretched; evil; calamitous; in *OE.*, mischievous. **Unhap'pily,** ad. unfortunately; miserably; in *OE.*, mischievously. **Unhap'pied,** a. *-pĭd,* in *OE.*, made unhappy. **Unhap'piness,** n. misfortune; misery; wretchedness.

UNHARASSED, a. *ŭn-hăr'ăst:* not harassed; not fatigued with bodily labor or with care; at ease.

UNHARBORED, a. *ŭn-hâr'bĕrd:* not sheltered.

UNHARDENED, a. *ŭn-hâr'dnd:* not hardened; not made firm or compact; not made obdurate, as the heart.

UNHARDY, a. *ŭn-hâr'dĭ:* not hardy or courageous; not able to endure fatigue; feeble.

UNHARMED, a. *ŭn-hârmd':* unhurt; uninjured,

UNHARMONIOUS, a. *ŭn'hâr-mō̆'nĭ-ŭs:* not harmonious; incongruous; discordant. **UN'HARMO'NIOUSLY**, ad.

UNHARNESS, v. *ŭn-hâr'nĕs:* to loose from harness or gear; to divest of armor. **UNHAR'NESSING**, imp. **UNHAR'NESSED**, pp.

UNHATCHED, a. *ŭn-hăcht':* not hatched; immature; not disclosed.

UNHAUNTED, a. *ŭn-hânt'ĕd:* not haunted; not frequented or resorted to; solitary.

UNHAZARDED, a. *ŭn-hăz'ėrd-ĕd:* not hazarded; not put in danger; not exposed to loss.

UNHEALTHY, a. *ŭn-hĕl'thĭ:* not healthy; unsound; sickly. **UNHEALTH'FUL**, a. injurious to health; unwholesome. **UNHEALTH'FULLY**, ad. **UNHEALTH'ILY**, ad. in an unwholesome manner. **UNHEALTH'INESS**, n. the quality or condition of being unhealthy.

UNHEARD, a. *ŭn-hėrd':* not heard; not perceived by the ear; unknown to fame; obscure. **UNHEARD OF**, unprecedented.

UNHEART, v. *ŭn-hârt':* in *OE.*, to discourage; to depress.

UNHEATED, a. *ŭn-hēt'ĕd:* not made hot.

UNHEAVENLY, a. *ŭn-hĕv'n-lĭ:* not heavenly.

UNHEDGED, a. *ŭn-hĕjd':* not surrounded by a hedge; not fenced in.

UNHEEDED, a. *ŭn-hēd'ĕd:* disregarded; neglected. **UNHEED'FUL**, a. inattentive; careless. **UNHEED'FULLY**, ad. **UNHEED'ING**, a. careless; negligent. **UNHEED'INGLY**, ad. **UNHEED'Y**, a. *-hēd'ĭ*, in *OE.*, precipitate; sudden.

UNHELE, v. *ŭn-hēl'* [*un*, not; AS. *helan*, to conceal]: in *OE.*, to uncover.

UNHELM, v. *ŭn-hĕlm':* to remove or deprive of a helm or helmet. **UNHELMED**, pp. a. *ŭn-hĕlmd'*, deprived of a helm or helmet; being without a helmet.

UNHELPED, a. *ŭn-hĕlpt':* having no aid or helper; unsupported. **UNHELP'FUL**, a. *-fûl*, giving no assistance.

UNHEPPEN, a. *ŭn-hĕp'pĕn* [*un*, not; AS. *hæp*, fit]: in *prov. Eng.*, ugly; awkward; deformed; misshapen.

UNHEROIC, a. *ŭn'hē-rō'ĭk:* not heroic; not brave.

UNHESITATING, a. *ŭn-hĕz'ĭ-tā-tĭng:* not remaining in doubt; prompt; ready. **UNHES'ITATINGLY**, ad.

UNHEWN, a. *ŭn-hūn':* not dressed, as stone; rough.

UNHINDERED, a. *ŭn-hĭn'dėrd:* not hindered or opposed.

UNHINGE, v. *ŭn-hĭnj':* to take from the hinges; to unfix; to loosen; to disorder; to trouble; to unsettle; to incapacitate. **UNHING'ING**, imp. **UNHINGED'**, pp. loosed from the hinges; unsettled; deranged.

UNHISTORICAL, a. *ŭn'hĭs-tŏr'ĭ-kăl:* not pertaining to or contained in history.

UNHIVE, v. *ŭn-hīv':* to drive from a hive; to deprive of a habitation.

UNHOARD, v. *ŭn-hōrd':* to dissipate or scatter that which has been hoarded.

UNHOLY, a. *ŭn-hō'lĭ:* profane; not holy; not hallowed or consecrated; impious; wicked; impure; not ceremonially purified. **Unho'lily**, ad. in an unholy manner. **Unho'liness**, n. impiety; an unsanctified state of the heart; profaneness.

UNHONORED, a. *ŭn-ŏn'ėrd:* not honored; not regarded; not held in high estimation; not celebrated.

UNHOOK, v. *ŭn-hûk':* to loose or detach from a hook.

UNHOPED, a. *ŭn-hōpt':* not expected; not so probable as to excite hope—usually with *for*, as an *unhoped-for* success. **Unhope'ful**, a. leaving no room for hope. **Unhope'fully**, ad.

UNHORSE, v. *ŭn-hŏrs':* to throw or drag from a horse; to cause to dismount. **Unhorsed'**, pp. thrown from a horse. **Unhors'ing**, imp. throwing from a horse; dismounting.

UNHOUSE, v. *ŭn-howz':* to drive from a house or habitation. **Unhoused'**, pp. a. expelled from a house or shelter; houseless; destitute of shelter; having no settled habitation.

UNHOUSELED, or **Unhouselled**, a. *ŭn-how'zĕld* [see **Housel**]: not having received the Eucharist.

UNHUMBLED, a. *ŭn-hŭm'bld:* not humbled; not ashamed; not contrite in spirit.

UNHUNG: see under **Unhang**.

UNHUNTED, a. *ŭn-hŭnt'ĕd:* not hunted; not pursued with hounds, as game.

UNHURT, a. *ŭn-hėrt':* not injured; not harmed. **Unhurt'ful**, a. harmless. **Unhurt'fully**, ad.

UNHUSBANDED, a. *ŭn-hŭz'bănd-ĕd:* without or deprived of a husband; not husbanded or managed with frugality.

UNHUSK, v. *ŭn-hŭsk':* to free from husks. **Unhusked'**, a. freed from the husk. **Unhusk'ing**, n. the process of freeing grain or other corn from the husk.

UNI-, prefix, *ū'nĭ* [L. *ūnus*, one]: a prefix signifying *only one* or *producing one*.

UNIATS, *ū'nĭ-ăts*, or **U'niates**, *-āts:* members of a Greek or Oriental chh. in communion with the see of Rome and detached from a schismatical parent chh. There are Greek U., Chaldean U., and Armenian U. (see **United Armenians**). The Uniate Greeks proper employ the Basilian or the Chrysostoman liturgy in Greek. The Uniate Bulgarians, Ruthenians, and Roumanians use the Greek liturgy translated into their own languages. See **Greek Church**—*United Greeks*. There are about 12,000 Greek Uniats in the United States—nearly all Ruthenians and Roumanians.

UNIAXIAL, a. *ū'nĭ-ăk'sĭ-ăl* [L. *ūnus*, one, and Eng *axis*]: having but one axis.

UNICELLULAR, a. *ū'nĭ-sĕl'ū-lėr* [L. *ūnus*, one, and Eng. *cellular*]: composed of one cell.

UNICLINAL, a. *ū'nĭ-klī'năl* [L. *ūnus*, one; Gr. *klinō*, I bend, I lean]: in *geol.*, inclining in one direction; monoclinal.

UNICORN, n. *ū'nĭ-kawrn* [L. *ūnus*, one; *cornu*, a horn]: fabulous animal resembling a horse, but having one horn issuing from its forehead; the sea-unicorn or narwhal, an animal of the whale kind having a long twisted tusk growing out of its nose. **U'nicor'nous**, a. *-kŏr'nŭs*, one-horned. **Unicorn-root**, the root of *Helōnias dioica*, ord. *Melanthāceæ*, used in N. America as an anthelmintic.—The *Unicorn* is mentioned by ancient Greek and Roman authors as a native of India, and is described as being of the size of a horse, but so swift that no horse could overtake it; the body white, but otherwise resembling that of a horse, with one straight horn 1½ to 2 cubits long on the forehead; the base of the horn white, the middle black, the tip red; head red, and eyes blue. The oldest author who describes it is Ctesias, about B.C. 400, physician at the court of Artaxerxes Mnemon. His information, however, was at second-hand. He calls it the Wild Ass (*Onos agrios*). Aristotle briefly mentions it under the name Indian Ass, saying: 'We have never seen a solid-hoofed animal with two horns, and there are only a few of them that have one horn, as the Indian Ass and the Oryx.' Pliny follows Aristotle in the main, but says that the Indian Ass is one-hoofed, and the Oryx two-hoofed. He speaks also of the *Monokeros*, a very fierce animal, with the body of a horse, head of a stag, feet of an elephant, tail of a wild boar, and a single horn. All these accounts are evidently much tinged with fable. Not more credible are those of more modern authors. Lobo, in his *History of Abyssinia*, describes the U. as resembling a beautiful horse; but there is no evidence of the existence of any such animal in that region. Though the descriptions of the U. given by the ancients apply very poorly to the Indian rhinoceros, it is probable that that animal was the origin of them all. In like manner, it is probable that the head of a U. which Barrow saw depicted on the side of a cavern in s. Africa, and the head of a U. described and figured by Campbell in his *Second Journey in S. Africa*, are to be referred to some species of rhinoceros. The word U. is erroneously used in the Authorized Version of the Old Test. (e.g., Deut. xxxiii. 17) to translate the Hebrew *rĕēm*. The Septuagint led the way in this, by using the Greek *Monokeros;* and it has been supposed by many that the animal meant is the rhinoceros. The rĕēm was, however, certainly not a one-horned, but a two-horned animal. In the passage noted above, where the Authorized Version has 'horns of unicorns,' the Revised Version has 'horns of the wild ox.' Elsewhere the alternative 'ox-antelope' is given in the margin of the new version.—For the Sea-Unicorn, see Narwhal.

The U. is best known as a heraldic charge or supporter. Two unicorns were borne as supporters of the Scottish royal arms for about a century before the union of the crowns; and the sinister supporter of the insignia of the United Kingdom is a unicorn argent, armed, crined, and unguled or, gorged with a coronet composed of crosses patée and fleurs-de-lis, with a chain affixed, passing between the fore-legs and reflexed over the back, of the last.

UNICOSTATE, a. *ū'nĭ-kŏs'tāt* [L. *ūnus*, one; *costa*, a rib]: in *bot.*, having a single rib or costa in the middle, called the midrib—applied to leaves.

UNIDEAED, a. *ŭn'ī-dē'ăd:* having no idea; inane.

UNIDEAL, a. *ŭn'ī-dē'ăl:* not ideal; real.

UNI-EQUIVALENT, *ū'nĭ-ē-kwĭv'ă-lĕnt:* in *chem.*, applied to an element whose atom is supposed to have only one combining power.

UNIFACIAL, a. *ū'nĭ-fā'shal* [L.*ūnus*, one; *faciēs*, the face]: having only one face or front surface.

UNIFICATION, UNIFIED: see under Unify.

UNIFLORAL, a. *ū'nĭ-flō'răl* [L. *ūnus*, one; *flos* or *flōrem*, a flower]: having but one flower.

UNIFORM, a. *ū'nĭ-fawrm* [F. *uniforme*—from L. *uniformis*, having only one form or shape—from *ūnus*, one; *forma*, shape]: having always the same form, manner, or character; not different; not variable; regular; equable; undeviating; consistent; homogeneous: N. [F. *uniforme*, a uniform]: an official or state dress; the particular style of dress as regards form, fashion, color, etc., which is worn, or prescribed to be worn officially by members of the same service or body, as in the army, navy, police, by railway employés, etc. Compulsory uniforms came in with the institution of standing armies. Soldiers serving with corps were dressed after their own fancy well into the 17th c.; in the Brit. navy, uniforms were not fixed with certainty until the reign of George III. Blue is the prevailing color in military and naval uniforms, the police, etc., though ornamented and 'faced' differently in different countries, and in different corps, as well as in different ranks. Scarlet may be said to be (for coats) the prevailing uniform of the Brit. army, though some regiments wear other colors (e.g., the rifles green and the artillery blue). Blue is the prevailing color of the German army uniform; in the French army, blue is used for coats and red for breeches. U'niformly, ad. *-lĭ*, without variation. U'nifor'mity, n. *-fŏr'mĭ-tĭ*, constant resemblance to itself; sameness; unvaried likeness; resemblance in shape and character, as between the corresponding parts of a subject in the fine arts. U'niform'ness, n. *-nĕs*, the state of being uniform; uniformity. Acts of Uniformity, the acts of parliament which regulate the rites and forms of the Church of England, Elizabeth 1559, Charles II. 1662 (see Nonconformists). U'nifor'mita'rian, n. *-fŏr'mĭ-tā'rĭ-ăn*, in *geol.*, one who holds the doctrine that the laws of nature have acted uniformly throughout all time past, and that the appearances in the earth's crust, however difficult of solution, are to be ascribed to the uniform action of those laws, and not to revolutionary operations—the opposite of *catastrophist:* Adj. of or pertaining to the uniformitarians.

UNIFY, v. *ū'nĭ-fī* [L. *ūnus*, one; *facĭō*, I make]: to reduce to unity or uniformity. **U'nifying**, imp. **U'nified**, pp. *-fīd:* **Adj.** made uniform and of one denomination instead of several; consolidated. **U'nifica'tion**, n. *-fĭ-kā'shŭn*, reduction to unity or uniformity.

UNIGENITURE, n. *ū'nĭ-jĕn'ĭ-tūr* [L. *ūnus*, one; *genĭtus*, pp. of *gigno*, I produce, bring forth]: the state of being the only-begotten. **U'nigen'itus**, a. *-ĭ-tŭs* [L.]: only-begotten.

UNIGEN'ITUS, **Bull**: celebrated bull issued by Pope Clement XI., which began with the word 'Unigenitus,' and which formally condemned a work written by Quesnel, entitled *Réflexions Morales*, reviving the essential principles of Jansenism (q.v.). The book was at first simply prohibited by a brief of Pope Innocent XI. 1708; but, as it found many patrons, especially the abp. of Paris, Cardinal de Noailles, it was deemed necessary to subject it to a more detailed examination, the result of which was that 101 propositions were extracted from it, and formally condemned 1713 by this famous bull. The mode of condemning these propositions was peculiar, being that technically called *Damnatio in globo*. The whole body of propositions was condemned as 'heretical, 'false,' 'rash,' 'scandalous,' 'offensive to pious ears,' etc.; without, at the same time, any particular propositions being pointed out as deserving any one of these specific forms of censure. This circumstance, with others, gave rise to much controversy, and to a prolonged opposition to the bull. De Noailles and other bishops refused to accept it unless with certain qualifications; on the contrary, Louis XIV. insisted on unconditional acceptance; but on the death of Louis, the regent (Duke of Orleans) having given his countenance to the opponents of the bull, the resistance was persisted in; and eventually a declaration was put forth, 1717, by four bishops, appealing from the pope to a general council. This appeal was condemned by the pope, nor was it countenanced even by the regent; but a more modified appeal, 'from the pope ill-informed to the pope better-informed,' was afterward published by De Noailles, which obtained many adherents, and by which the opposition was kept alive till the end of the pontificate of Clement XI. 1721, and even under his successors, Innocent XIII. and Benedict XIII. It was not till 1730 that, after the formal registration of the Bull Unigenitus by the parliament of Paris, the party thus created in France, and known under the name of 'Appellants,' received its final condemnation from the civil authority, after which it gradually died out, though some relics of it are still traceable, even after all the storms of the Revolution, in the so-called 'Petite Église.' See **Gallican Church**.

UNIGENOUS, a. *ū-nĭj'ĕ-nŭs* [L. *ūnus*, one; *genus*, a kind]: of one or the same kind or genus.

UNIJUGATE, a. *ū-nĭj'ū-gāt* [L. *ūnus*, one; *jugum*, a yoke]: in *bot.*, applied to a pinnate leaf having one pair of leaflets.

UNILABIATE, a. *ū'nĭ-lā'bĭ-āt* [L. *ūnus*, one, and *labium*, a lip]: in *bot.*, having one lip only.

UNILATERAL, a. *ū'nĭ-lăt'ėr-ăl* [L. *ūnus*, one; *latus*, a side, *latĕris*, of a side]: having but one side; arranged on one side or turned to one side.

UNILITERAL, a. *ū'nĭ-lĭt'ėr-ăl* [L. *ūnus*, one; *litĕra*, a letter]: consisting of one letter only.

UNILLUMINATED, a. *ŭn'ĭl lô'mĭ-nā-tĕd:* dark; ignorant.

UNILOCULAR, a. *ū'nĭ-lŏk'ū-lėr* [L. *ūnus*, one; *locŭlus*, a little place—from *locus*, a place]: having a single division or cavity; one-celled.

UNIMAGINABLE, a. *ŭn'ĭm-ăj'ĭn-ă-bl:* not to be conceived. UN'IMAG'INABLY, ad. UN'IMAG'INATIVE, a. not imaginative. UN'IMAG'INED, a. not conceived.

UNIMITATED, a. *ŭn-ĭm'ĭ-tā-tĕd:* not imitated.

UNIMPAIRED, a. *ŭn'ĭm-pārd':* not impaired; not enfeebled.

UNIMPASSIONED, a. *ŭn'ĭm-păsh'ŭnd:* not endowed with passions; cool; calm; not vehement.

UNIMPEACHABLE, a. *ŭn'ĭm-pēch'ă-bl:* that cannot be accused; free from stain or fault. UN'IMPEACH'ABLENESS, n. *-nĕs*, the state or quality of being unimpeachable. UN'IMPEACHED', a. not charged or accused.

UNIMPEDED, a. *ŭn'ĭm-pē'dĕd:* not impeded or hindered.

UNIMPLORED, a. *ŭn'ĭm-plōrd':* not solicited.

UNIMPORTANT, a. *ŭn'ĭm-pawrt'ănt:* not important; insignificant. UN'IMPORT'ANCE, n. *-ăns*, want of importance.

UNIMPORTUNED, a. *ŭn-ĭm'pŏr-tūnd':* not importuned.

UNIMPOSING, a. *ŭn'ĭm-pō'zĭng:* not imposing; not adapted to impress forcibly.

UNIMPRESSIBLE, a. *ŭn'ĭm-prĕs'sĭ-bl:* not impressible. UN'IMPRESSED', a. not impressed; not awakened or aroused; not fixed deep in the mind. UN'IMPRES'SIVE, a. not forcible; not adapted to awaken the passions. UN'IMPRES'SIVELY, ad.

UNIMPROVABLE, a. *ŭn'ĭm-prôv'ă-bl:* not capable of improvement by culture or tillage. UN'IMPROVED', a. not improved; not advanced in knowledge or excellence; not profited by; not tilled. UN'IMPROV'ING, a. not tending to advance or instruct.

UNIMUSCULAR, a. *ū'nĭ-mŭs'kū-lėr* [L. *ūnus*, one; *muscŭlus*, a muscle]: applied to a bone having one muscle only, and one muscular impression.

UNINCLOSED, a. *ŭn'ĭn-klōzd':* not inclosed.

UNINCORPORATED, a. *ŭn'ĭn-kŏr'pō-rā-tĕd:* not united in one body; not blended.

UNINCUMBERED, a. *ŭn'ĭn-kŭm'bėrd:* not burdened; free from mortgage or other incumbrance or charge.

UNINDORSED, a. *ŭn'ĭn-dŏrst':* not indorsed or assigned.

UNINFECTED, a. *ŭn'ĭn-fĕkt'ĕd:* not infected; not contaminated by foul air; not corrupted. **UN'INFEC'TIOUS**, a. *-fĕk'shŭs*, not foul; not capable of communicating disease.

UNINFESTED, a. *ŭn'ĭn-fĕst'ĕd:* not infested.

UNINFLAMED, a. *ŭn'ĭn-flāmd':* not inflamed; not set on fire; not highly provoked. **UN'INFLAM'MABLE**, a. not inflammable; that cannot be set on fire.

UNINFLUENCED, a. *ŭn-ĭn'flû-ĕnst:* not influenced; not persuaded or moved by others; acting freely. **UNIN'FLUEN'TIAL**, a. not possessing influence.

UNINFORMED, a. *ŭn'ĭn-fawrmd':* not instructed; untaught; not suffused with life or color.

UNINHABITABLE, a. *ŭn'ĭn-hăb'ĭ-tă-bl:* unfit to be dwelt in by men. **UN'INHAB'ITED**, a. not dwelt in by men; without inhabitants.

UNINITIATED, a. *ŭn'ĭn-ĭsh'ĭ-ā-tĕd:* not initiated.

UNINJURED, a. *ŭn-ĭn'jûrd:* not hurt; suffering no harm.

UNINSCRIBED, a. *ŭn'ĭn-skrībd':* not inscribed; not marked with letters or characters.

UNINSPIRED, a. *ŭn'ĭn-spīrd':* not inspired; not having received any supernatural instruction or illumination.

UNINSTRUCTED, a. *ŭn'ĭn-strŭkt'ĕd:* not educated; not furnished with instructions or directions. **UN'INSTRUC'TIVE**, a. not conferring improvement.

UNINSULATED, a. *ŭn-ĭn'sū-lā-tĕd:* not insulated; not separated or detached.

UNINSURED, a. *ŭn'ĭn-shôrd':* not secured against loss, as by fire, shipwreck, or the like.

UNINTELLECTUAL, a. *ŭn-ĭn'tĕl-lĕk'tū-ăl:* not intellectual.

UNINTELLIGENT, a. *ŭn'ĭn-tĕl'lĭ-jĕnt:* lacking or deficient in intelligence or understanding. **UN'INTEL'LIGENCE**, n. *-lĭ-jĕns*, lack of intelligence; stupidity. **UN'INTEL'LIGIBLE**, a. *-lĭ-jĭ-bl*, that cannot be understood. **UN'INTEL'LIGIBLY**, ad. *-blĭ*.

UNINTENDED, a. *ŭn'ĭn-tĕnd'ĕd:* not intended.

UNINTENTIONAL, a. *ŭn'ĭn-tĕn'shŭn-ăl:* not intentional; done or happening without design. **UN'INTEN'TIONALLY**, ad. without design.

UNINTERESTED, a. *ŭn-ĭn'tĕr-ĕst-ĕd:* not having the mind engaged; having nothing at stake. **UNIN'TERESTING**, a. not capable of exciting or attracting the mind. **UNIN'TERESTINGLY**, ad. *-lĭ*.

UNINTERPOLATED, a. *ŭn'ĭn-tĕr'pō-lā-tĕd:* not interpolated.

UNINTERPRETED, a. *ŭn'ĭn-tĕr'prĕ-tĕd:* not interpreted or explained.

UNINTERRED, a. *ŭn'ĭn-tĕrd':* not buried.

UNINTERRUPTED, a. *ŭn'in-tĕr-rŭp'tĕd:* not interrupted; not broken; unceasing; not disturbed by intrusion or by another occupation. **Unin'terrup'tedly**, ad.

UNINTRENCHED, a. *ŭn'ĭn-trĕnsht':* not protected by a ditch and parapet.

UNINTRODUCED, a. *ŭn'ĭn-trō-dūst':* not introduced; not duly conducted or ushered into a place; not brought into notice.

UNINURED, a. *ŭn'ĭn-ūrd':* not hardened by use or practice.

UNINVENTED, a. *ŭn'ĭn-vĕnt'ĕd:* undiscovered. **Un'inven'tive**, a. *-tĭv,* destitute of invention.

UNINVESTED, a. *ŭn'ĭn-vĕst'ĕd:* not placed in possession, as of an office; not laid siege to; not laid out in some investment.

UNINVESTIGATED, a. *ŭn'ĭn-vĕs'tĭ-gā-tĕd:* not searched into.

UNINVITED, a. *ŭn'ĭn-vī'tĕd:* not invited; not requested; unbidden; not solicited. **Un'invi'ting**, a. not enticing; not alluring; ungracious.

UNINVOKED, a. *ŭn'ĭn-vōkt':* not invoked.

UNIO, n. *ū'nĭ-ō* [L. *unĭō,* unity, the number one—from *ūnus,* one]: genus of bivalves containing the river-mussels; a member of this genus or of the family *Unionidæ.* **Unionidæ**, n. plu. *ū'nĭ-ŏn'ĭ-dē,* the family of river-mussels found in ponds and streams (see **Freshwater Mussel**).

UNION: town, Hudson co., N. J.; on the Hudson river, opposite New York, 1 m. n. of Hoboken.—Pop. (1880) 5,849; (1890) 10,643.

UNION, n. *ūn'yŭn* or *ū'nĭ-ŭn* [F. *union,* union—from mid. L. *unĭō* or *unĭōnem,* a union—from L. *ūnus,* one: It. *unione*]: the act of joining two or more things into one in order to form a new body; concord; agreement; intimate connection; that which is united or made into one; a combination, confederation, or league: in particular, (*a*) a permanent combination among workmen engaged in the same occupation or trade, instituted for mutual protection and assistance in matters of dispute between them and their employers (see **Trade-union**); (*b*) in England and Ireland, several parishes united for the joint management of their poor; (*c*) the work-house maintained by such a combination of parishes: a fabric of different materials, as cotton and wool, or of silk or linen and wool: that part of a flag which occupies the upper corner next the staff and is distinguished from the rest by color or pattern. **Un'ionism**, n. *-ĭzm,* the system of combination among workmen engaged in the same occupation or trade. **Un'ionist**, n. *-ĭst,* one who advocates or promotes union; a member of a trade-union. **Un'ionis'tic**, a. *-ĭs'tĭk,* of or pertaining to unionism; tending toward union. **Union-cord**, a round white cord made of mixed cotton and linen threads. **Union-joint**, a joint in the form of the letter T for uniting pipes of iron, etc. **Union by the first intention**, in *surg.*, the growing together of the opposite surfaces of a recent wound, when brought into contact, without suppuration. **Union'down,** adverbial phrase, meaning 'with the union down,' denoting the position of a flag flying upside down as a signal of distress.—Syn. of 'union': junction; concord; coalition; unity; combination; alliance; connection.

UNION, Legislative, of Great Britain and Ireland: the incorporation of England and Scotland, 1707, and of Ireland with both, 1801, for legislative purposes. The crowns of England and Scotland were united under one sovereign on the accession of James VI. of Scotland to the English throne as James I. 1603; each country, however, continuing to be governed by laws enacted by its respective parliament, the interest of one often coming into collision with that of the other. After various fruitless proposals for closer connection of the countries, the Scotch were prevailed on, 1702, to send 20 commissioners to London to confer with 23 English commissioners on the terms of a union. Their proceedings, after being broken off, were resumed 1706. The Scottish commissioners were at first in favor of a mere federal union, and objected to the proposed assimilation of customs, excise, and regulations of trade; but a majority were at last brought over to the views of the English commissioners; and the minority, with one exception, yielded. The Union, popular in England, gave great dissatisfaction in Scotland, being regarded by the bulk of the community as a surrender of national independence to a powerful rival. Addresses against it were presented from all quarters, and in some places the people rose in arms, forming regiments of horse and foot to oppose it. The treaty, however, was ratified by the parliaments of both countries, and the union effected 1707, May 1. Its principal conditions were the incorporation of England and Scotland into the United Kingdom of Great Britain, the succession of whose monarchs was to be the same as that of England. There was to be one parliament, in which the peers of Scotland would be represented by 16 of their number elected to each parliament, and 45 Scotch members were to sit in the house of commons. All rights and privileges were to be communicated between the subjects of both kingdoms, unless when otherwise agreed. The Episcopal Church was confirmed in England, and the Presbyterian in Scotland. Scotland was to retain her courts of session and justiciary, and to have a separate seal for private rights and grants. While the parliament was to raise £2,000,000 by land-tax, Scotland would contribute £48,000 of that sum. The laws of trade, customs, and excise in Scotland were to be assimilated to those of England, and the coinage, weights, and measures of the two countries were to follow a uniform standard. In other matters the laws of Scotland were to remain in force, but might be altered by the parliament of Great Britain. The separate privy council of Scotland, which the Act of Union left untouched, was abolished the following year.

Ireland remained a distinct kingdom till 1801, when it was united with Great Britain into the United Kingdom of Great Britain and Ireland (q.v.). By the terms of the union, the separate parliament of Ireland was abolished, and Ireland was represented in the parliament of the United Kingdom by 4 lords spiritual and 28 lords temporal in the house of lords, and 120 members of the house of commons. Power was reserved to the sovereign to create one peer of Ireland for every three peerages that might become extinct; and when the peerage of Ireland became reduced to 100, to create one peerage for each one that became extinct, so as to keep the peerage of Ireland up to 100, besides those Irish peers who are peers also of England or of Great Britain. The churches of England and Ireland were united into one Prot. Episc. Church. The inhabitants of Ireland were placed on the same footing as those of Great Britain in respect of trade and navigation, and in all treaties with foreign powers; and the law-courts of Ireland were to continue, subject to the regulations of parliament—writs of error and appeals being decided by the house of lords of the United Kingdom.

UNION CHRISTIAN CHURCH, The: denomination of Christians, organized at Columbus, O., 1865; merged with the former 'Christian Connection' 1886—these united denominations being now known as 'Christians' (see Christians, The).

UNION COLLEGE: see Union University.

UNION-JACK [from F. *jacque*, surcoat or jacket, charged with the red cross of St. George, worn by English soldiers in the middle ages (see Jack)]: national banner of the United Kingdom of Great Britain and Ireland; formed out of a combination or union of the crosses of St. George (argent, a cross gules), of St. Andrew (azure, a saltire argent), and of St. Patrick (argent, a saltire gules), representing England, Scotland, and Ireland respectively. The first union-jack, introduced by royal proclamation 1606, three years after the union of the Scottish with the English crown, combined the crosses of St. George and St. Andrew; and was by royal proclamation 1707, July 28, constituted the national flag of Great Britain (fig. 1). On the union of Ireland with Great Britain, a new union ensign was devised, in which the cross of St. Patrick was introduced, with its four limbs edged with white on one side: this awkward specimen of heraldry forms the present union ensign (fig. 2)

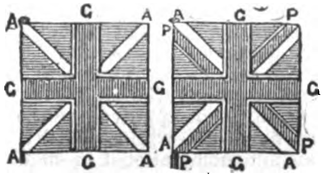


Fig. 1. Fig. 2.

G, St. George's Cross; A, St. Andrew's Cross; P, St. Patrick's Cross.

UNION THEOLOGICAL SEMINARY: institution in New York for educating candidates for the ministry of the Presb. Chh. It was opened 1836, chartered 1839. Till 1884 the seminary occupied a building in University Place; then it removed to the imposing group of structures on Fourth avenue specially erected for it. The U. T. S. is governed by a board of trustees, members of the Presb. Chh., one-half of whom are ministers, the other half laymen. The professors (who all are ministers of the Presb. Chh.), are required to subscribe to the Westminster confession of faith and to declare their acceptance *ex animo* of the ecclesiastical polity of Presbyterianism. The professors are (1896–7) 12 in number; there are also instructors in sacred music and in elocution. Subscription to the Presb. standards is not required of students: the institution is open to students of every Christian evangelical denomination. The conditions of admission are: proved good standing in an evangelical chh., and evidence that the candidate has received a regular collegiate education; but a candidate may demonstrate on examination by the faculty his competent acquaintance with the subject-matters of a college course, and may be admitted though he have never studied in college. The number of students (1896–7) was 152. The grounds and buildings are valued at more than $500,000; productive funds $1,400,000. Instruction is gratuitous. The annual rental of a room in the seminary building with light and heat is $35. There are in the library 70,000 vols., about 50,000 pamphlets, and about 200 MSS. The nucleus of the library was about 13,000 vols. forming the private library of Leander Van Ess, in which are contained 430 vols. printed between 1469 and 1510, 1,246 pieces of Reformation literature in original editions, 4,209 works of ecclesiastical history, writings of the Fathers, etc., and 200 editions of the Bible in Latin and in German.—This seminary, though affirming the regular doctrinal standards of the Presb. Church, is regarded as giving them a liberal interpretation.—Upon the controversy that arose about Dr. Briggs (q.v.) in 1892, the seminary rescinded the concession formerly made to the gen. assembly of a veto on the appointment of its professors, and the gen. assembly thereupon removed the seminary from the list of institutions under its approval, and instructed boards of education not to grant aid to candidates for the ministry attending institutions not approved by the gen. assembly. The seminary therefore, while virtually Presb., stands officially as an undenominational or independent institution. The pres. is Charles Cuthbert Hall, D.D.

UNIONTOWN, *ūn'yŭn-town:* borough in Fayette co., Penn.; on the Pennsylvania and the Baltimore and Ohio railroads; 72 m. s.-by-e. of Pittsburgh. It is in an agricultural, limestone, coke, coal, and iron-ore region, and was formerly known as Beesontown, from Jacob Beeson, who laid it out 1783. There are one daily and 4 weekly newspapers; manufactories of flour, cement, brick, foundry products, sashes and blinds, and tanned leather; and large shipments of grain and live-stock.—Pop. (1880) 3,265; (1890) 6,359.

UNION UNIVERSITY.

UNION UNIVERSITY (formerly UNION COLLEGE): institution of learning at Schenectady, N. Y., founded 1795, by the regents of the Univ. of the State of N. Y., as 'Union College.' The nucleus of the foundation was the 'Schenectady Academy,' a school established under the patronage of the Reformed Dutch Chh. 1785. Repeated efforts were made after 1792 to obtain for the academy a college charter; but the legislature refused to grant it till 1795, when the managers of the academy gave guarantees that the proposed college should be free from the taint of sectarianism. By the terms of the charter, the faculty of the college were invested with all the rights and privileges theretofore enjoyed by Columbia College, in the city of New York, and empowered to confer 'such degrees as are usually granted by any or either of the universities of England.' There were at first 24 trustees, later only 21. and some of these were to be certain officers of the state govt. *ex officio*. The enlargement of the college into a university was effected by charter 1873, four other institutions—viz., schools of law, pharmacy, and medicine, and an astronomical observatory—being united with the college. These additional departments have their seat at Albany. The first pres. of Union College was the Rev. John Blair Smith, D.D , Presb.; he was succeeded by the Rev. Jonathan Edwards, D.D., Congl.; to whom succeeded the Rev. Jonathan Maxey, D.D., Bapt. In 1804 Union College obtained for its head the Rev. Eliphalet Nott, D.D , LL.D., Presb., who held the presidency 48 years, and who even after his resignation 1852, till his death 1866, was the guiding genius of the institution. During his long tenure of office, Dr. Nott held his college in the foremost rank of educational institutions in America (see NOTT, ELIPHALET). Dr. Nott was succeeded in the presidency by the Rev. Laurens P. Hickok, D.D., LL.D., who retired 1868. A layman, Ira Harris, was then (nominally) pres. for a time; to him succeeded the Rev. Charles A. Aiken, D.D., PH.D. Union chose a pres. from among her own alumni first in 1871, when the Rev. Eliphalet Nott Potter, D.D., LL.D., Prot. Episc., grandson of Eliphalet Nott, was elected. Dr. Potter retired 1884. Then till 1888 the college had no formally elected pres.; but in that year the trustees chose for head of the univ. Harrison Edwin Webster, LL.D., an alumnus and former professor.—U. U. is fittingly housed in 'North College' and 'South College,' two structures 4 stories high, and each 200 ft. front, with wings of less height, but 300 ft. long, extending rearward. These edifices are L-shaped and stand on a terrace, with the extremities of the short limbs of the L's turned toward each other, but 200 ft. or more apart; in the mid-space are residences of professors; the long limbs inclose the campus on two sides; in the rear of the campus is a 16-sided stone structure, 84 ft. in diameter, capped with a dome that rises 120 ft. above the floor: it is a costly building, lavishly ornate, and is a memorial of Pres. Nott. There are several other structures, as the library building, gymnasium, Swiss cottages, etc. The vols. in the library number 30,000. There is a well-appointed physical laboratory; there are also valuable natural-history collections—of shells, birds, minerals, etc. The museum of engineering models and implements represents the entire history of practical engineering. The courses of study conducted in the college proper are the classical, the scientific, and the engineering. The other university courses—those of law, pharmacy, and medicine—are given at Albany in the affiliated schools. The pres. of the univ. (1897) is Andrew V. V. Raymond, D.D. In 1897 the profs. and instructors in the collegiate dept. numbered 27; students 216. Its invested funds amounted to $393,602, and its annual revenue to $80,000; scholarships 49. Value of scientific apparatus $25,000; of grounds and buildings $500,000.

UNIPAROUS, a. *ū-nĭp'ă-rŭs* [L. *ūnus*, one; *pariō*, I bear or bring forth]: producing only one at a birth; in *bot.*, having a cymose inflorescence in which the primary axis produces one bract, and so on, the cyme being elongated according to its development; having a scorpioidal cyme.

UNIPED, a. *ū'nĭ-pĕd* [L. *ūnus*, one; *pes* or *pĕdem*, a foot]: having only one foot.

UNIPETALOUS, a. *ū'nĭ-pĕt'ă-lŭs* [L. *ūnus*, one, Gr. *pĕtălon*, a leaf]: having a corolla consisting of one petal, which depends upon the abortion or non-development of others—to be distinguished from Monopetalous (q.v.).

UNIPOLAR, a. *ū-nĭp'ō-lėr* [L. *ūnus*, one; *pŏlus*, a pole] in *anat.*, having a single pole, as certain ganglionic nerve-cells; having but one radiating process.

UNIQUE, a. *ū-nēk'* [F. *unique*, sole, singular—from L. *unĭcus*, only, sole—from *ūnus*, one]: sole; only; without an equal; without another of the same kind: N. anything unparalleled or without an equal. UNIQUE'LY, ad. *-lĭ*. UNIQUE'NESS, n. *-nĕs*, the state of being unique.

UNIRADIATED, a. *ū'nĭ-rā'dĭ-ā-tĕd* [L. *ūnus*, one; *radĭus*, a ray]: having one ray.

UNIRRITATED, a. *ŭn-ĭr'rĭ-tā-tĕd:* not provoked or angered.

UNISEPTATE, a. *ū'nĭ-sĕp'tāt* [L. *ūnus*, one; *septum*, a hedge]: in *bot.*, having but one septum.

UNISERIATE, a. *ū'nĭ-sē'rĭ-āt*, or UNISE'RIAL, a. *-rĭ-ăl* [L. *ūnus*, one; *sērĭēs*, a row, a series]: in *bot.*, arranged in a single line or row. UN'ISER'IATELY, ad.

UNISEXUAL, a. *ū'nĭ-sĕks'ū-ăl* [L. *ūnus*, one, and Eng. *sexual*]: of a single sex—applied to plants having separate male and female flowers.

UNISON, n. *ū'nĭ-sŭn* [L. *ūnus*, one; *sŏnus*, a sound]: sameness of sound; sounds precisely equal in respect to acuteness or gravity; two or more sounds of the same name produced at the same time; agreement; concord: ADJ. sounding alone. UNISONANT, a. *ū-nĭs'ō-nănt* [L. *sonans* or *sonan'tem*, sounding]: having the same degree of gravity or acuteness. UNIS'ONANCE, n. *-năns*, accordance of sounds. UNIS'ONOUS, a. *-nŭs*, sounding in harmony.

UNIT, n. *ū'nĭt* [L. *unitas*, oneness, sameness—from *ūnus*, one: F. *unité;* It. *unità*]: one; a single person or thing; the least whole number; a certain dimension or magnitude assumed as a standard of measure—thus, in English-speaking countries the inch is the *unit* of length.

UNITARIAN, n. *ū'nĭ-tā'rĭ-ăn* [L. *unitas*, oneness—from *ūnus*, one]: one who denies the doctrine of the Trinity, ascribing true and proper divinity to God the Father only: ADJ. pertaining to. U'NITA'RIANISM, n. *-izm*, the doctrines of those who deny the deity of Christ as being inconsistent with the unity of God, and who deny the personality of the Holy Spirit.—*Unitarians*, maintaining that God exists in one person only, deny his tri-personality (see TRINITY). In its general sense, the name of course includes the Jews and Mohammedans as well as those Christians who deny the doctrine of the Trinity, and in this sense there have been Unitarians from the earliest period of ecclesiastical history. Until the middle of the 2d c. there seems to have been no controversy on the subject; but from that time to the end of the 3d c., a succession of eminent teachers maintained, against the ecclesiastical doctrine of the Logos, the undivided unity—or, as they expressed it, the *Monarchy*—of God. From their use of this word, they are known in ecclesiastical history as the Monarchians: see MONARCHIANISM; and its references. There are generally understood to have been two classes of them—first, those who taught that Christ was God in a sense so absolute that it was the Father who became man, and was born and suffered; hence these were called by their opponents Patripassians (q.v.): secondly, those who taught that Christ was in nature a mere man, but exalted above all other prophets by the superior measure of divine wisdom with which he was endowed; thus this class corresponded more nearly with modern Unitarians. About the middle of the 3d c., the famous Sabellius (q.v.) taught the doctrine of a trinity not of persons, but only of divine modes or manifestations—a view essentially like those of the first class of Monarchians. The other class was represented by Theodotus, Artemon, and especially Paul of Samosata, Bp. of Antioch, who was eventually deposed for his heresy. Beryllus, Bp. of Bostra, in Arabia, who is said to have been convinced of his error by Origen, seems, from the single sentence which records his teaching, to have belonged to this class.

The great theological struggle in the 4th c. between the Arians and the Athanasians may be regarded as another phase of the Unitarian controversy, inasmuch as Arius held that the Son, though brought into existence before all worlds, and the highest of all created beings, was a created being—thus denying his consubstantiality with the Father: see ARIUS: ATHANASIUS. We now pass to the post-Reformation period.

With the great stir of thought at the Reformation came question and denial of the doctrine of the Trinity—and this even before the time of the Socini (see SOCINUS). Notable among disputants on this theme was the Spaniard

Michael Servetus (q.v.). Indeed, the Unitarian doctrine was quite widely diffused. Under the influence of the elder Socinus, Unitarianism gained adherents in Venetia; but Poland and Transylvania became its strongholds. In Poland the nobility favored it, and the Unitarian refugees from other countries found welcome; and in the reign of Sigismund II. (1548–1572) this party of reformers was strong enough to form a separate church. Somewhat later, Poland was the field of labor of the younger Socinus (q.v.), and Unitarianism flourished there till the middle of the 17th c., when, under John Casimir, who before his elevation to the throne had been a cardinal and a Jesuit, it was extirpated by force. In Transylvania the Unitarians have maintained their existence till the present day. Under the influence of George Blandrata and Francis Davidis (1565), large numbers, including the king himself, embraced the new opinions. But their progress was hindered by the usual division between radical and conservative views regarding worship to be rendered to Christ. After the incorporation of Transylvania with the Austrian empire 1690, the Unitarians were despoiled by the Rom. Catholics of all their churches and church property, largely prevented from building new churches, and by degrees excluded from all govt. offices. With the accession of Joseph II. came protection and larger liberty, and even indemnity for former outrages. The Unitarians of Transylvania number about 55,000, in a church-organization with a bishop at its head. They have excellent colleges and schools. Their Unitarianism has now become largely conformed to the modern type in England and in the United States.

In England, Unitarian opinions were later in making their appearance than on the continent, though there were a few early cases of individuals persecuted for such teachings. But during the reign of James I. continental Socinianism began to gain adherents, and by 1705 had so increased that Palmer—referring to the Church of England —spoke of 'troops of Unitarian and Socinian writers.' Many eminent men of the time, including Milton, Locke, and Newton, and, in the next century, Lardner, are claimed by the Unitarians as showing more or less sympathy with their views. After the passing of the Toleration Act 1689, whereby Nonconformity was made legal, the way was prepared for that gradual change by which the orthodoxy of the English Presb. Church passed by gradual change first into Arianism, then into full Unitarianism. It was at this time that most of the old Presb. chapels were founded; and the trusts (unlike those of the Congregationalists and Baptists) being open—i.e., the use of the funds not committed to any doctrinal system—there was no legal obstacle to the adoption of whatever new opinions should approve themselves to their conscience: see PRESBYTERIAN CHURCH IN ENGLAND. It should be understood, however, that the *doctrinal* articles of the established church were in no sense or degree the cause of the original separation from that church of those who passed into the Presb. connection. The doctrinal change was gradual and slow

During the latter half of the 18th c. Dr. Priestley (q.v.) appeared as the champion of the humanitarian view of Christ's nature; and by the influence of his writings secured the more open advocacy of that doctrine. In 1778 Dr. Lindsey resigned his charge in the Church of England, and became pastor of the Unitarian congregation of Essex street, London—an epoch in English Unitarianism. In 1813 the Unitarians were placed by law on a par with other dissenters. The Unitarians of England and Wales are purely congregational in church government, their only organ for combined action being the Brit. and Foreign Unit. Assoc., meeting annually in London. Their principal place of education is Manchester New College, London, which is, however, unsectarian. They have also a missionary college in Manchester; and the Presb. College, Caermarthen, educates Independent and Unitarian ministers. They have at present about 300 chapels and 80 mission stations. Influenced by the writings of Channing, and by such thinkers as James Martineau, J. J. Tayler, and others, the English Unitarianism of the last half of the 19th c. has taken on a type more emotional and spiritual and less dogmatic than that which characterized the system advocated by Priestley and his followers.

In Scotland the religious atmosphere has never been favorable to Unitarianism: there are only a few scattered Unitarian congregations.

In Ireland the history of Unitarianism is intimately connected with that of Presbyterianism. It flourishes principally in the north of the island, where there is a strong infusion of Scotch blood, and where Rom. Catholicism has the least influence. There are about 10,000 Unitarians in Ireland. The Unitarians of Ireland are Presbyterians in fact as well as in name.

In the principal colonies of Great Britain there are a few Unitarian churches.—Unitarian sentiments, under the names Liberal Christianity, Rationalism, etc., are more or less widely diffused—often without organization—in Great Britain, France, Switzerland, Germany, and Holland: in some of the old continental churches, Rationalism, involving Unitarian views, has large influence.

Unitarianism in the United States has passed through much the same phases as in Great Britain. The first preacher of Unitarianism in the American colonies of England was probably Ebenezer Gay (1696–1787), pastor of Hingham, Mass., by many styled 'father of American Unitarianism.' James Freeman, D.D. (1759–1835), rector of the King's Chapel, Boston (established for an Episcopal church), excised from the Book of Common Prayer all mention of the Divine Trinity, and all expressions implying divine worship of Jesus; from 1783 King's Chapel was distinctly Unitarian. Harvard College strongly favored the Unitarian cause; the pres. and fellows chose for prof. of divinity, 1805, Dr. Henry Ware (1764–1845), a confessed Unitarian. The churches in Boston and its near vicinity felt the influence from Harvard, and many became Unitarian; but in other regions of New England the changes were only few and scattering. The change was in many cases facilitated by the fact that the law of Mass. gave right of voting in a 'parish' to members of the congregation as well as to the members of the church (or communicants). The parish, having the power to vote in settling a minister, and having also legal control of all funds and property, in many cases acted irrespective of the church in transferring the whole property and corporate existence of the institution. The ancient church at Plymouth, Mass., became Unitarian 1801. The division which has since become so clearly marked between the evangelical Congl. churches in New England and the Unitarian churches was developed gradually through a series of years by a withdrawal of fellowship by church after church—not by any formal denominational act of expulsion by the large evangelical majority, nor by any formal general act of secession by those who adopted the new views. Since the separation became distinct and final, the increase in the number of Unitarian churches in New England has not been great. The denomination there, as elsewhere, is notable for culture and for its attention to educational and philanthropic interests. Dr. William Ellery Channing (q.v.) promulgated at the ordination of Jared Sparks, 1819, the 'Unitarian declaration of independence;' and was thereafter the recognized leader of Unitarianism in the United States and England. The American Unitarian Assoc. was formed 1825. The Unitarians have a divinity school at Cambridge, Mass., and a theol. school at Meadville, Penn. A report of the assoc. (1889) declares that in the United States, in 25 years next preceding, the Unitarian churches had increased from less than 250 to nearly 400. In 1897 there were reported 457 churches and 351 Sunday schools. The denomination publishes no reports of membership, of church expenses, or of benevolent gifts. But the total number of members or adherents is estimated at about 75,000; and it is known that they give liberally in general charity. The American Unitarian Assoc. became incorporated 1847, and was made a delegate body 1859: it is the chief organ of denominational activity. A body cognate with it was formed in 1865, the National Conference of Unitarian and Other Christian Churches: it meets biennially, and issues an address to the churches on the state of the denomination, with advice as to plans and methods of work. The National Alliance of Unitarian and Other Christian Women is efficient for denominational interests through its many local branches. Anti-Trinitarian opinions are understood to be held by many Universalists and Hicksite Quakers.

The following is a brief sketch of the theological opinions held by Unitarians.

The early Socinians (according to the Racovian Catechism, from which this outline of their views is drawn) assumed the sufficiency of Scripture, or rather of the New Test., which, they held, had, for all matters of faith, superseded the Old. According to their system, Christ was a true man, but conceived of the Holy Spirit; and on account of the divine power which he has received from the Father, and his exaltation as head over all things, he is to be worshipped. The Holy Spirit is not a person, but a divine influence. The Socinians rejected the doctrine of original sin. Man, they taught, was created with a mortal nature, but by special gift of God was endowed with a conditional immortality. He was created innocent, but not positively righteous. The gift of immortality he forfeited by disobedience. The fall of Adam, however, being a single act, could not deprave his own nature, much less that of his posterity; and, in the latter, death was not a consequence of the fall, but was simply the condition of birth and life. Thus the actual consequence of Adam's fall was not any radical corruption of human nature, but rather a moral deterioration, producing, with repeated acts of disobedience, an increasing tendency to sin. Man, after the fall, retained his free will. Christ's merits consisted principally not in his death, but in his life, teachings, and example. His death was not an atoning sacrifice, nor had it any vicarious efficacy, but was simply a confirmation of God's will, and the seal of the new covenant. Christ died for our sins—first, that all sinners might thus have assurance of forgiveness and of eternal life; secondly, that they might be drawn to seek through him alone remission of their sins; and thirdly, that God might thus testify His boundless love to the human race, and might reconcile it to Himself. But the crucifixion was important chiefly as preparing the way for the great crowning miracle of the resurrection, in which is the central point of the Christian scheme. By this he confirmed his doctrine of immortality, and prepared for his ascension into heaven, where he now fills the office of our great High-Priest. Predestination in this system means the decree of God, made before the foundation of the world, that they who believed and were obedient should be saved, and that they who believed not and were disobedient should be lost. Justification takes place when God pardons our sins and gives us eternal life. The Socinians regarded the 'sacraments' as simply external signs testifying to Christian faith. Hence they deemed infant baptism irrational as well as unscriptural, but thought that a custom so venerable should be tolerated.

The systematic theology of the early Socinians is in England and the United States a thing of the past; indeed the modern Unitarians, though more or less influenced by their continental brethren of the Reformation period, have with the latter no direct historical connection. They seem rather to have arrived at independent conclusions, through their 'rational' interpretation of Scripture, and their consistent rejection of authority in matters of faith. The Unitarians of the present day, like almost all Christian sects, are divided into two classes—conservative and progressive. The former adopt the old rule of the sufficiency of Scripture, though with the qualifications resulting from the scientific criticism of the Bible. The most conservative Unitarians, e.g., would not contend for the literal truth of the first chapter of Genesis, nor admit any doctrine of verbal inspiration. They now generally hold the simple humanity of Christ, and even reject his supernatural birth, thinking the part of the gospels which records that event less authentic than the parts referring to the life, teaching, death, and resurrection of Jesus. To the death of Christ they ascribe much the same kind of efficacy as was ascribed to it by the Socinians, regarding his teaching and example as the essential part of his work, and his death as an attestation to the truth of his mission. Many of them do not hold to his bodily resurrection. What, however, chiefly distinguishes the conservative from the new or progressive Unitarians is the place which—following Locke's philosophy and Priestley's theology—they give to the miracles as supernatural sanctions indispensable for evidencing to man the truth of Christianity. 'If there be any truth in history,' says Dr. Priestley, whose influence can still be traced in the conservative Unitarians, 'Christ wrought unquestionable miracles, as a proof of his mission from God; he preached the great doctrine of the resurrection from the dead; he raised several persons from a state of death; and, what was more, he himself died and rose again in confirmation of his doctrine. The belief of these facts I call the belief of Christianity.' The new or progressive Unitarians, on the other hand, regard man as having within his own nature the germs of the highest religious faith. Christianity, accordingly, they regard not as a *message* or a system of truth communicated and authenticated from without, but as the highest expression of the divine in humanity—an expression not necessarily preternatural, but having its place in the history of mankind by the natural laws of moral and spiritual development. To this view of Christianity the miracles are not essential as proofs; and Christian truths are thought to be unaffected by any judgment regarding them. However, many of the Unitarians of this school accept the miracles as historical facts, considering that there is sufficient evidence for them. An increasing number agree with many of the German critics in rejecting them, on the twofold ground that they are intrinsically incredible and that the evidence for them is conflicting and uncertain. Generally, the Unitarians of this school are disposed to the very freest criticism of the Bible—holding that inspiration is not peculiar to the Bible, but common to all the most elevated religious literature, and gives no immunity from error. Yet, as a record of the grandest religious movements of the world's history, they hold the Bible in the highest estimation. From these distinctive views, these two Unitarian schools in fact merge into each other by imperceptible gradations, with evident and steadily increasing gain of the new or rationalistic mode.

The Unitarians of all shades of opinion are agreed in rejecting the entire orthodox scheme—including the doctrines of the Trinity, the vicarious atonement, the consubstantiality of Christ with the Father, original sin, and everlasting punishment—as both unscriptural and irrational. They generally celebrate the Lord's Supper in their churches as merely a service commemorative of Christ's death as a martyr, and expressive of spiritual communion with him. They also adhere generally to the rite of infant baptism. In recent years the Unitarians have given great prominence to the principles of Comprehension and of Free Inquiry apart from the restraints of theological creeds, conceiving that in this they are conforming to the spirit of their English Presbyterian forefathers; and many object even to the name Unitarian, as one which might imply a doctrinal bond of union, and might thus be inconsistent with the fundamental principles of the body. Illustrative of this point has been the action of the Unitarians in England and the United States in giving an emphatic negative to motions defining 'Unitarian Christianity'—the motions being intended as a conservative protest against anti-supernaturalism. The rejection, on the other hand, was an assertion of the principle of comprehension and freedom, and in each case was voted for by many who sympathized doctrinally with the proposer, as well as by those who differed from him.—Dr. Beard's *Unitarianism in Its Actual Condition;* the Rev. J. J. Tayler's *Religious Life of England;* Otto Fock's *Socinianismus;* Lange's *Geschichte und Lehrbegriff der Unitarier vor der Nicänischen Synode;* J. H. Allen's *Our Liberal Movement in Theology* (2d ed. Boston 1883); and theological writings of J. Martineau.

UNI'TAS FRA'TRUM: see MORAVIAN BRETHREN.

UNITE, v. *ū-nīt'* [L. *unītus*, pp. of *unĭō*, I join together—from *ūnus*, one: It. *unire:* F. *unir*]: to join two or more into one; to combine; to join in affection or interest; to cause to agree; to make to adhere; to coalesce; to be cemented; to couple; to grow together; to be mixed; to concur; to act in concert; to grow up into one. **UNI'TING**, imp. **UNI'TED**, pp.: ADJ. joined; made to agree; mixed. **UNI'TEDLY**, ad. *-lĭ*. **UNI'TABLE**, a. *-tă-bl*, that may be united. **UNI'TER**, n. *-tėr*, one who or that which unites. **UNITIVE**, a. *ū'nĭ-tĭv*, tending toward union. **UNITY**, n. *ū'nĭ-tĭ* [L. *unĭtas* or *unĭtātem*, oneness]: state of being one; concord; agreement; oneness of sentiment or behavior. **UNITIES**, n. plu. *ū'nĭ-tĭz*, the correspondence of various parts so as to form one harmonious whole; the principles of dramatic writing, in which the correspondence of time, place, and action is preserved. **UNITED BRETHREN**, the Moravians (q.v.). **UNITED PRESBYTERIANS**, in *Scot.*, the church formed in 1847 by the amalgamation of the Secession and Relief churches.—SYN. of 'unite': to coalesce; connect; add; join; amalgamate; attach; cohere;—of 'unity': union; oneness; junction; harmony.

UNI'TED ARMENIANS, *âr-mē'nĭ-ans*, or **ARME'NIAN U'NIATS**: members of an Armenian Cath. chh. organization in communion with the Roman see. Their liturgy differs in essence and in language from that of Rome; as does also their ecclesiastical discipline. Their proximate head is the patriarch of Cilicia, residing at Constantinople. The people number about 100,000, and live in Turkey, Russia, both Armenias, Syria, Mesopotamia, and Egypt. There are 10 bps. and abps., and about 350 priests: see UNIATS: ARMENIAN CHURCH: GREEK CHURCH—*United Greeks*.

UNI'TED BRETH'REN, or **BOHEMIAN BRETHREN**: see MORAVIAN BRETHREN.

UNI'TED BRETH'REN IN CHRIST: denomination of evangelical Christians founded through the labors of the Rev. Philip William Otterbein (q.v.). Though not formally organized till 1800, its origin is traceable to the revival movement begun by the meeting of Mr. Otterbein with the Rev. Martin Boehm, a minister of the Mennonites, about 1766. Following this date, 'great meetings' were held, and revivals were promoted, especially among the Germans. As the work enlarged. preachers were licensed by these leaders, and conferences were held 1789 and 91; but the movement did not take the form of a church till 1800, when a conference was held at Peter Kemp's in Frederick co., Md., at which the name of the denomination was definitely fixed, and Otterbein and Boehm were chosen bishops. Thereafter conferences were held annually. At the first general conference, 1815, June, at Mt. Pleasant, Penn., the Confession of Faith was revised and formally adopted. The church was not the result of a schism, nor an offshoot from any denomination, but the result of a natural growth in adoption of such organization and methods as were found requisite in its providential mission. The U. B. have sometimes been confounded with the Moravians, *Unitas Fratrum*, with whom they never had any historical connection. They have been classed sometimes as Methodists, for which there is no authority whatever: Otterbein and Boehm both were preaching the doctrines of a change of heart and the witness of the Spirit before there were any Methodists in America. The government of the church is composite, combining elements of simplicity and flexibility. A formal constitution for the church was adopted by the general conference 1841. The highest legislative and judicial authority is vested in a general conference which meets quadrennially, composed of elders and laymen elected by the entire membership of the church. Other official bodies in the church are annual and quarterly conferences, and on stations the official board. Lay representation in the annual conferences was authorized 1877, and was made a definite rule 1889. The superintendents of the church are called bishops, and are elected every four years by the general conference. In the annual conferences superintendents are known as presiding elders, and are chosen for a period of one year. The constitution provides for the 'itinerant plan' of ministerial service. Ministers are appointed to their charges one year at a time by a stationing committee composed, since 1889, of the bishop and presiding elders of an annual conference. The time-limit of the pastoral term is fixed at three years, with the provision that it may be indefinitely extended by consent of the annual conference. Since 1889, women have been admitted to the ministry on the same terms as men. The general conference of 1885 provided for a commission of 27 members, lay and clerical, to submit to the membership amendments to the constitution and a revised Confession of Faith. The results were approved by a very large vote at a general election throughout the church 1888, Nov. At the following general conference, 1889, May, in York, Penn., the amended constitution and the revised Confession of Faith were declared to be the organic law and articles of faith. A schism resulted from this progressive action, 15 members withdrawing from the general conference, who formed a separate organization, with a small and scattered following.

The church is Arminian in theology, is characterized by liberty and simplicity in worship, congregational singing, and participation of all members, male and female, in the devotional services. It is aggressive and evangelistic in spirit; and on moral questions has ever taken advanced ground, especially on slavery and intemperance. The observance of baptism and the Lord's Supper is required; but the mode of baptism and the manner of observing the Lord's Supper are left to individual judgment. A personal religious experience is a condition of membership.

Originating in Md., Penn., and Va., the church extended westward, first to Ohio and Ind., then to Canada and the western states and territories to the Pacific coast. Though its first work was principally among the Germans, at present less than 2 per cent. are attending services conducted in the German language. A publishing-house was established at Circleville, O., 1834; removed to Dayton, O., 1853. The *Religious Telescope*, the leading organ of the church, was founded 1834; *Our Bible Teacher*, magazine for S.-S. teachers, 1873; the *Quarterly Review*, 1889. The net assets of the publishing house are $280,268.03, with annual business of more than $160,000, that yields large profits, which are devoted to the support of old and dependent ministers, and of the widows and orphans of ministers deceased. In 1853 a Missionary Soc. was organized, having home missions, and missions in Germany, w. Africa, and Japan. In 1875 the Women's Missionary Assoc. was organized, and now has successful missions in Germany, Africa, and China, and among the Chinese at Portland, Ore. The church has a theol. seminary at Dayton, O. (the Union Biblical Seminary, total assets $178,753, course of study 3 years); 9 colleges—the first being established 1847; 6 academies; with buildings and ground worth $400,000, and endowments aggregating $395,000. Its leading educational institution w. of the Mississippi is Western College, founded 1856, established at Toledo, Iowa, 1881; pres., the Rev. L. Bookwalter, D.D. Co-education of the sexes has been a satisfactory feature throughout. The curriculum provides two years of preparatory study and four years of regular college work. There is a Conservatory of Music and a College of Commerce. The building (rebuilt 1890, after a fire) is one of the most complete college buildings in the state; total assets $190,877; students (1895) 275. The church has also church erection, Sunday-school, and educational boards, and is incorporated by a board of trustees elected 1889. The following are statistics for 1895: Churches 2,242; ministers 2,104; members 233,204, a gain of about 5 per cent. over 1894 and of nearly 15 per cent. since 1890; Young People's Christian Union societies 1,419; members 56,405; Sunday schools 3,573; officers, teachers, and scholars 281,428; contributions for missions, general $46,051; woman's $15,162; for educational purposes $50,085; total for all purposes $1,186,923, averaging $5.09 per member; valuation of church edifices and parsonages $5,709,460.

UNITED COLONIES OF NEW ENGLAND (1643): see Confederation of the Thirteen American Colonies.

UNI'TED EVANGEL'ICAL CHURCH: the official or state Protestant chh. of the kingdom of Prussia. The division of Protestants into Lutherans and Calvinists was deeply regretted by statesmen and churchmen throughout Germany from the beginning, and many attempts were made to effect a union through the instrumentality of conferences such as that at Leipzig 1631, at Thorn 1645, at Cassel 1661. But at last an autocratic decree brought about the long-desired consummation in Nassau and Prussia 1817, Hesse 1823, Anhalt-Dessau 1827. The process of unification was attended with some friction; but the governments were not over-exacting, and soon the Lutherans and Reformed worshipped together in harmony. People were not required to forsake their Lutheranism or their Calvinism (see Lutherans): the two bodies, Lutheran and Reformed, were simply brought under one government—that of the Oberkirchenrath or superior church council. The result as seen in the Prussian census returns of 1875 is that nearly the whole body of Protestants in that kingdom belong to the U. E. C.: of 16,636,990 Protestants, 13,266,620 were in the state church fold; the rest were in Lutheran and in Reformed churches. In later censuses of Prussia, Protestants, whether of the U. E. C., the Lutheran, or of the Reformed churches, are classed together as simply 'Evangelical;' but the established chh. still holds the great mass of the Prot. believers. The number of ununited Calvinists and Lutherans is as large as it is only on account of the unwillingness of Protestants in recently conquered provinces, as Hanover and Sleswick-Holstein, to enter the Prussian state chh.—The U. E. C. has a liturgy, neither Calvinistic nor Lutheran, prescribed by the supreme authority of Frederick William III.

UNI'TED GREEKS: see Greek Church.

UNITED KINGDOM OF GREAT BRITAIN AND IRELAND: the legal and official designation of the British Islands, since the union of the three kingdoms of England, Scotland, and Ireland, 1801. See **GREAT BRITAIN**: **UNION, LEGISLATIVE**, of Great Britain and Ireland: ETC.

UNI'TED METH'ODIST FREE CHURCH: see **METHODISTS** (British).

UNI'TED PRESBYTE'RIAN CHURCH: religious body in Scotland, constituted 1847 by amalgamation of the **SECESSION** and **RELIEF CHURCHES**.

The **SECESSION CHURCH**.—The Prot. Reformation in Scotland was very emphatic and decisive in regard to both the doctrine and the government of the church. The people became strongly Calvinistic and Presbyterian; and the efforts of King James to supplant their system by Episcopacy proved unavailing, so far as the great body of the commons and gentry were concerned; though, from various considerations, many of the Scottish nobles adopted the church principles of their sovereign, and after the Restoration (1660) supported the governments of Charles and James in their persecution of the Covenanters: see **COVENANTS**: **SCOTLAND**: **SCOTLAND, CHURCH OF**. At the meeting of the Scottish Estates 1690, Episcopacy, which in Scotland had obtained temporary supremacy under the rule of Sharp (q.v.) and Lauderdale, was abolished, and Presbyterianism (q.v.) re-established. But after the 'glorious revolution' the spirit of the nation underwent a great change in regard to religion; and the new latitudinarianism of the times appears in the fact that hundreds of Episcopalian curates were allowed to retain the parishes in which they had been arbitrarily stationed, on subscribing the Confession of Faith; and great numbers of Episcopalian laymen became elders in a church whose strict adherents they had themselves recently hunted even to death. Bp. Burnet describes these curates as 'the worst preachers I ever heard, ignorant to a reproach, and many of them openly vicious.' In 1712, when the obnoxious *Law of Patronage* was restored, the triumph of the 'court' or 'Moderate' party in the church was complete: see **MARROW CONTROVERSY**. Violent settlements of curates, effected by the agency of dragoons, became frequent; and the petitions and appeals of the people against them were disregarded by the gen. assembly, and in 1730 were even rebuked. The Rev. Ebenezer Erskine (1732) publicly denounced this ecclesiastical tyranny; and he, with 3 other ministers, having refused to retract after admonition and censure—first by his synod, and then on appeal to the gen. assembly—were (1733) declared 'no longer ministers of the church.' Thereupon they protested that they were obliged to 'make a secession.' (See **ERSKINE, EBENEZER**.) This was the origin of the famous Secession Church, which has made so deep an impress on the religious life of Scotland. Erskine and his friends published a statement of their reasons for separation, under the title *A Testimony to the Doctrine, Worship, Government, and Discipline of the Church of Scotland, or Reasons (by the Four Brethren) for*

Their Protestation entered before the Commission of the General Assembly. This document, afterward known as the 'First or Extrajudicial Testimony,' shows that it was not only the odious 'law of patronage' that induced Erskine and his friends to leave the church of their fathers; but an accumulation of grievances that in their eyes had become insupportable. What the 'four brethren' sought was the vindication of what they held to be evangelical truth. So much popular indignation was excited by the deposition of the 'four brethren,' that the 'Moderate party' thought it best to make some concessions to the 'Evangelicals' or 'Marrow party.' Accordingly, the gen. assembly 1734 empowered the 'synod of Perth and Stirling' to remove the censures from the four brethren; but Mr. Erskine declined to be 'reponed;' and published his reasons. In 1736, Dec., appeared the pamphlet entitled *An Act, Declaration, and Testimony for the Doctrine, Worship, Discipline and Government of the Church of Scotland,* commonly known as the 'Judicial Testimony,' which is a sort of survey of the whole ecclesiastical history of Scotland from the Reformation. In 1737 four other ministers joined the original 'four.' The church authorities now resolved to proceed to extremities against the seceders; and after one final effort to win them back, the gen. assembly of 1740 solemnly pronounced their deposition. In spite of the frequent refusal of sites for churches, and other modes of persecution, the Secession Church prospered.

In 1747 a rupture or 'breach' took place in the new body on the question of the burgess-oath, some affirming that this oath could not be taken by any consistent Seceder, and others insisting that it could, and that the question regarding it ought to be a matter of mutual forbearance. The party condemning the religious clause in the burgess-oath formed the *General Associate Synod,* or, popularly, the *Anti-burgher Synod;* the party tolerating it, the *Associate* or *Burgher Synod.* Subsequently a second split occurred in each of these; and two other minor denominations were formed—one assuming the designation of the *Constitutional Associate Presbytery,* or *Old Light Anti-burghers* (1806); and the other the designation of the *Original Burgher Presbytery,* or *Old Light Burghers* (1799). After holding aloof more than 70 years, the Burghers and Anti-burghers were solemnly reunited. At the date of the 'breach' (1747) the number of Secession congregations was 32; when the reunion took place (1820) it had increased to 262. Thereafter the Secession Church had uninterrupted prosperity. A certain change, however, began to show itself in the character and spirit of the denomination. Their *old-world look,* their interest chiefly in bygone events, their very language —like their sentiments—archaic, took on a modern aspect: they felt the new-born enthusiasm for foreign missions; and in 1847, at the union of the Secession and Relief Churches, the former was supporting a staff of more than 60 missionaries in different parts of the world. Further, the *Secession* Church began to assume an attitude more antagonistic to the Establishment; and a controversy between leading divines of the Establishment and of the Secession, known as the *Voluntary Controversy* (1829–34), served to strengthen the voluntaryism of the Seceders (see **Voluntaryism**), and brought them nearer to the Relief Church (see below). Next followed the *Atonement Controversy*, in which the Secession Church adhered to the liberal evangelical theology of the Marrow; in this also having sympathy of the Relief body. In 1847, May 13, the two churches formed themselves into one body, the **United Presbyterian Church.**

We now revert to the **Relief Church.** After the expulsion of Erskine and his friends from the Church of Scotland, the assemblies (packed with 'court of session elders') became more determinedly 'Moderate' than ever. They proceeded to deprive the people of all right to elect, or in any way to interfere with the election of, ministers. Never were forced settlements more shameless than about this period: and the demand for *Relief* took the form of a protest against the induction of a very unpopular minister to the parish of Inverkeithing, presbytery of Dunfermline (1749). This protest, after much discussion, in presbytery and gen. assembly, resulted 1752 in the condemnation and deposition by the assembly of the Rev. Thos. Gillespie, for his leadership in a steadfast refusal to obey the order of the assembly to proceed with the unpopular induction—the order being addressed to the presbytery of Dunfermline. Thus the *Relief Church* was founded on an assertion of the right of congregations to elect their own ministers. 'Societies' (as in the case of the Seceders) sprang up in many places, and were gradually formed into congregations; though the Relief had long to sustain a severe attack from the Seceders and the Reformed Presbyterians, for their adherence to the latitudinarian principle of 'free communion,' i.e., of holding Christian fellowship at the Lord's table with other denominations. At the union 1847 the Relief numbered 113 congregations, while the Secession numbered 384 congregations; so that the **United Presbyterian Church** began with 497 churches and a membership estimated at more than 140,000.

United Presbyterian Church.—The career of this church as a corporate body has been prosperous. In doctrine it adheres (like all the other Presb. churches of Scotland) to the Westminster Confession of Faith and the Larger and Shorter Catechisms, 'it being always understood that we do not approve of anything in these documents which teaches, or may be supposed to teach, compulsory or persecuting and intolerant principles in religion'—a qualification supposed to refer particularly to the 23d chapter of the Confession of Faith. Its form of church government is Presbyterian; but, unlike the Established and Free Churches, it has no intermediate courts (synods) between presbyteries and the supreme court, the latter of which it designates not as a Gen. Assembly, but only as a Synod; though, in fact, it partakes more of the nature of a 'general' assembly than the bodies known by that name, since it is really an assembly of the whole clergy of the denomination, with one elder from each kirk-session. (See SCOTLAND, CHURCH OF: FREE CHURCH OF SCOTLAND: PRESBYTERIANISM.) It has a Theological Hall and Library in Edinburgh, and a staff of professors. The U. P. Church is now, both in practice and in theory, a voluntary church, having by long experience of practical voluntaryism reached the conviction that Christianity is best served by total separation of church and state. Although with less wealth than the Established and Free Churches, the U. P. Church has not been inferior in its general liberality.

In 1875 about 100 congregations of the U. P. Church formed in England were transferred by the mother church in Scotland to the 'Presbyterian Church in England' (q.v.). Since the separation of its English branch the U. P. Church still counts about 550 congregations and 175.000 members. Protracted negotiations for union between the U. P. and Free Churches have been without result.

UNI'TED PRESBYTE'RIAN CHURCH OF NORTH AMERICA: denomination formed by the organic union of two previously distinct Presb. bodies, the 'Associate Presbyterian Church' and the 'Associate Reformed Presbyterian Church.'

The *Associate Reformed Chh.* in the United States represented a union of Irish and Scotch Presbyterians belonging to the Secession Chh. of Scotland and to the Chh. of the Covenanters or Reformed Presbyterians respectively: the people were settled mostly in Va., Penn., and N. J. The union was consummated at a meeting of presbyters of the two churches named, and of some Burgher presbyters (another small branch of Scotch Presbyterianism), at Philadelphia, 1782, Oct. There was formed a synod, styled Associate Reformed Synod of North America. From its chief stronghold in the Cumberland valley of Penn., the Associate Reformed Chh. sent colonies to the Carolinas, Ga., Ky., and to N. Y., Me., and N. H. When this chh. coalesced with the Associate Presbyterian Chh. 1858, to form the United Presbyterian Chh., it had 4 synods, 28 presbyteries, 253 ministers, 31,284 communicants.

The *Associate Presbyterian Chh.* came into existence 1782, as a protest against the 'Declaration and Testimony' of the Associate Reformed. It early had a valuable accession of strength in ministers sent out from Scotland; to it also, after a while, gravitated many sternly orthodox Presbyterians, ministerial and lay, from the Associate Reformed fold. Its first synod (1801) consisted of 17 ministers, divided into 4 presbyteries. There was a serious division, even an organized secession, of the more strict venerators of Scotch orthodoxy 1840; but the erring brethren were taken back into the fold 1854. At the formation of the United Presbyterian Chh. 1858, the Associate Synod comprised 21 presbyteries, 231 ministers and licentiates, 23,505 communicants: thus had the insignificant band of seceders from the Associate Reformed Chh., 1782, grown to almost as large proportions as its rival.

The union forming the U. P. Church was effected 1858, May, on the doctrinal basis of the Westminster Confession of Faith (with a very slight modification) and the Westminster Catechisms, and on a 'Testimony' comprising 18 articles relating to conduct, terms of communion, etc. Among the points of the testimony was the denunciation of slave-holding (long before condemned in the uniting churches) as sinful; condemnation of secret oath-bound societies; restriction of the song-service to the use of the Bible psalms; denial of communion in saving ordinances to persons who refuse to adhere to the church's profession of faith. In 1868 the gen. assembly gave an interpretation on 'communion in saving ordinances,' leaving the matter to the discretion of sessions. A report published at the first general assembly, held in Xenia, O., 1859, May, showed 55,547 members, in 634 congregations, served by 408 ministers, in 42 presbyteries. The same general assembly constituted the following boards for conducting the operations of the chh.: foreign missions, home missions, publication, church extension, education. Later, to these were added boards of freedmen's missions and of ministerial relief. An improved metrical version of the psalms was approved by the general assembly for use in public worship 1871. The assembly also declared the church prohibition of instrumental music in worship repealed: instruments are being introduced into many of the leading churches.

The official statistics for 1896 are: Synods 12; presbyteries 65; ministers 869; average salary of ministers $1,054; ministers without charge 280; congregations 948; congregations without pastors 252; members 120,790—increase over 1895, 3,093, or about 2½ per cent., and an increase of 20 per cent. since 1890; Sabbath schools 1,122; officers and teachers 11,589; scholars 107,121; congregational missionary societies 921; young people's societies 805, with members 35,146; contributions for salaries and congregational purposes $1,059,996; to boards $255,366; for general purposes $102,736; total $1,404,090, averaging $13.13 per member; theological seminaries at Allegheny, Penn., and Xenia, O., with 143 students, and productive endowments of $291,800; 9 colleges and academies, with 1,142 students, and productive endowment of $352,000; publishing house at Pittsburg, Penn., where is published the leading church paper, the *United Presbyterian;* foreign mission fields in Egypt and India.

The principal strength of the denomination is found in the following states: Penn. has 42 per cent. of the total membership, confined mostly to the western part of the state; O., 16 per cent.; N. Y., 10 per cent.; Iowa, 8 per cent.; Ill., 7 per cent.; and Kan., 4 per cent.—See UNITED PRESBYTERIAN CHURCH (in Scotland): SCOTLAND, CHURCH OF; PRESBYTERIANISM: ETC.

UNITED PROVINCES: see NETHERLANDS.

UNITED STATES ARMY (popularly known as 'the regular army'): national militia established by act of congress, under the official control of the pres. as commander-in-chief of the army and navy, directed by the sec. of war under orders from the pres., and under the immediate command (1897) of Gen. Nelson A. Miles (q.v.), the senior maj.-gen. It consisted of 10 cav. regts., with 432 officers and 6,170 enlisted men; 5 artil. regts., with 280 officers and 4,025 men; 25 inf. regts., with 877 officers and 13,125 men; and a miscellaneous force comprising the engineer battalion, ordnance dept., hospital service, signal corps, milit. acad., etc., in all 537 officers and 2,386 men—total strength 2,126 officers and 25,706 men. The country was divided into 8 milit. depts., known as the Dept. of the East, the Missouri, California, Dakota, Texas, the Platte, the Colorado, and the Columbia. Privates in the artil., cav., and inf., and the engineers (2d class), ordnance, and signal corps, are paid $13 per month in the 1st and 2d year of a first enlistment, $14 in the 3d year, $15 in the 4th, and $16 in the 5th; $18 per month in each of the 5 years of a first re-enlistment; and $19 per month in each year of subsequent enlistments. Privates in the engineers (1st class), ordnance, and signal corps, receive $17 per month in the 1st and 2d year of a first enlistment, $18 in the 3d year, $19 in the 4th, and $20 in the fifth; $22 per month in each of the 5 years of a first re-enlistment; and $23 per month in each year of subsequent enlistments. See STOPPAGE OF PAY.

See ENGINEERS, UNITED STATES CORPS OF: ORDNANCE DEPARTMENT—in the United States: QUARTERMASTER'S DEPARTMENT: also, under GENERAL: LIEUTENANT: ETC.

There were 10 milit. bureaus in the war dept., the chiefs of which were officers of the regular army, and a part of the permanent establishment—viz., adjutant-general, inspector-general, quartermaster-general, commissary-general, surgeon-general, paymaster-general, chief of engineers, chief of ordnance, judge-advocate-general, and chief signal officer. All chiefs of bureaus have the rank and pay of a brigadier-general.

Service in the U. S. A. is purely voluntary, and recruiting-offices are kept open always in large cities to supply the vacancies caused by death, desertion, and discharge. The army is officered above the grade of sergt. by graduates of the U. S. Military Academy (q.v.), excepting where specially meritorious service leads to the promotion beyond that grade of subordinate officers and privates.

The only milit. reserve force in the U. S. is the militia of the several states and territories, which, though not constantly under arms, is always available for local or general emergencies. In 1895 this force aggregated 9,505 commissioned officers, and 107,394 non-commissioned officers, musicians, and privates; total organized 116,899; total authorized 171,984; total federal appropriation $400,-000; total state $2,557,741; total liable to military duty 10,180,043. See MILITIA: UNITED STATES NAVY.

The U. S. maintained at Washington, D. C., a home

TABLE OF PAY ALLOWED BY LAW TO OFFICERS OF THE U. S. ARMY.

Grade.	Pay of Officers in Active Service.*						Pay of Retired Officers.*					
	Pay of Grade.		Monthly Pay.				Pay of Grade.		Monthly Pay.			
	Yearly.	Monthly.	After 5 Years' Service	After 10 Years' Service	After 15 Years' Service	After 20 Years' Service	Yearly.	Monthly.	After 5 Years' Service	After 10 Years' Service	After 15 Years' Service	After 20 Years' Service
			10 *p. ct.*	20 *p. ct.*	30 *p. ct.*	40 *p. ct.*						
Lieutenant-General (retired)†	....	....	....	....	....	....	$8,250.00	$687.50	....	....	....	....
Major-General	$7,500.00	$625.00	....	....	....	....	5,625.00	468.75	....	....	....	....
Brigadier-General	5,500.00	458.33	....	....	....	....	4,125.00	343.75	....	....	....	....
Colonel	3,500.00	291.67	$320.83	$350.00	‡$375.00	$375.00	2,625.00	218.75	$240.62	$262.50	$281.25	$281.25
Lieut.Colonel	3,000.00	250.00	275.00	300.00	325.00	§333 33	2,250.00	187.50	206.25	225.00	243.75	250.00
Major	2,500.00	208.33	229.17	250.00	270.83	291.67	1.875.00	156.25	171.87	187.50	203.12	218.75
Captain, mounted	2,000.00	166.67	183.33	200.00	216.67	233.33	1.500.00	125.00	187.50	150.00	162.50	175.00
Captain, not mounted	1,800.00	150.00	165.00	180.00	195.00	210.00	1,350.00	112.50	123.75	135.00	146.25	157.50
Regimental Adjutant	1,800.00	150.00	165.00	180.00	195.00	210.00	....	....	....	....	....	....
Regimental Quartermaster	1,800.00	150.00	165.00	180.00	195.00	210.00	....	....	....	....	....	....
First Lieutenant, mounted	1,600.00	133.33	146.67	160 00	173.33	186.67	1,200.00	100.00	110.00	120.00	130.00	140.00
First Lieutenant, not mounted	1,500.00	125.00	137.50	150.00	162.50	175.00	1,125.00	93.75	103.12	112.50	121.87	181.25
Second Lieutenant, mounted	1,500.00	125.00	137.50	150.00	162.50	175.00	1,125.00	93.75	103.12	112.50	121.87	131.25
Second Lieut., not mounted	1,400.00	116.67	128.33	140.00	151.67	163.33	1,050.00	87.50	96.25	105 00	113.75	122.50
Chaplain	1,500.00	125.00	137.50	150.00	162.50	175.00	1,350.00	112.50	123.75	135.00	146.25	157.50

* According to Revised Statutes, secs. 1261, 1262, 1263, 1274.

† The rank of General was discontinued on the death of Gen. Sheridan.

‡ Maximum pay of a Colonel, $4,500 per annum. [Revised Statutes, sec. 1267.]

§ Maximum pay of a Lieut.Colonel, $4,000 per annum. [Revised Statutes, sec. 1267.]

for discharged soldiers of the regular army and a national home for disabled soldiers and sailors of the volunteer (civil war) army, with branches at Dayton, O.; Milwaukee, Wis.; Togus, Me.; Hampton, Va.; Leavenworth, Kan.; Santa Monica, Cal.; and Marion, Ind. The following states also maintained homes for disabled soldiers and sailors of the Union volunteer army: Cal., Col., Conn., Ida., Ill., Io., Kan., Mass., Mich., Minn., Neb., N. H., N. J., N. Y., N. D., O., Ore., Penn., R. I., S. D., Vt., Wash., and Wis. Homes for disabled Confederate soldiers and sailors were in operation in many Southern states.

UNITED STATES MILITARY ACADEMY: national institution at West Point, N. Y., for education of officers for the regular army; organized 1802. Candidates for admission must be 17–22 years old, at least 5 ft. in height, of good moral character, and free from anything that would render them unfit for milit. service. They must pass a severe medical examination, and an examination in reading, writing, orthography, arithmetic, elements of Eng. grammar, descriptive geography, and the history of the United States. The course is 4 years, the pay is $540 per annum; an oath of allegiance is required of each cadet, also a pledge to serve the United States for 8 years after graduation unless sooner discharged. Admission is secured by appointment—each congressional district and terr. and the D. C. being entitled to one cadet, and the pres. of the United States having the right to appoint 10 cadets annually from the country at large. Appointments from states and territories are made by the sec. of war on recommendation of congressional representatives and delegates; and presidential appointments are usually of sons of dead or distinguished officers of the army or navy or of other officials. In recent years the practice has become general for a representative or delegate to recommend to the sec. of war for appointment the boy who attains the highest ratings in a competitive examination held for the purpose and open to all eligible boys in the district.—The curriculum comprises the departments of tactics; civil and military engineering; natural and experimental philosophy; mathematics, history, geography, and ethics; chemistry, mineralogy, and geology; drawing; modern languages; law; practical military engineering, military signalling, and telegraphy; and ordnance and gunnery. The professors in the various depts. are usually appointed from civil life, and receive the pay of lieut.col. in the army in the first 10 years of service, and that of col. afterward; and the asst. professors and instructors are young officers appointed from the army, who receive the army pay of their respective grades. The chief executive is officially known as the supt., and while holding the office has the rank and pay of a col. of engineers, whatever his army grade may be. As the acad. was originally established as a school of engineering, its supts. for many years were appointed from the corps of engineers; but since 1866 the office of supt. has been open to all branches of the service. The second executive officer is the commandant of cadets, who has the rank and pay of a lieut.col. of engineers. The annual examinations are held in the presence of a 'board of visitors,' comprising 7 members appointed by the pres., 2 U. S. senators appointed by the pres. of the senate, and 3 representatives appointed by the speaker of the house. The graduating class is divided into 3 parts when practicable, the first comprising those of exceptionally high standing, who are privileged to select the branch in which they wish to serve; the second, those recommended for commissions in any branch excepting the engineers; the third, those recommended for any branch excepting the engineers and artillery. The graduates are commissioned brevet 2d lieuts. and 2d lieuts. by the pres. according to the recommendations of the board of visitors. In the academic year 1895–6 the acad. had 9 permanent professors; 55 officers of the army temporarily detailed as instructors and for other duties connected with the acad. and milit. post of West Point; 322 cadets; 38,203 vols. in the library; and govt. appropriations for maintenance, salaries, etc., of $464,262 for 1896 and $448,117 for 1897. The milit. reservation covers about 2,400 acres, and the various buildings have been erected from time to time since 1800. Neither the value of the grounds and buildings nor of the scientific apparatus, with which each dept. has been liberally supplied, has ever been estimated. Under the 1880 census the number of cadets authorized by law was 347; under that of 1890 the number was increased to 371, to take effect 1893, June. Owing to resignations, discharges, and other causes, the number present for duty is generally about 18 per cent. below the maximum.

UNITED STATES NAVAL ACADEMY: national institution for education of officers for the U. S. navy; at Annapolis, Md., established by George Bancroft, when sec. of the navy, and opened 1845, Oct. 10. The site and buildings of Fort Severn, on Annapolis harbor, at the mouth of the Severn river, were transferred by the war dept. to the 'Naval School,' as it was originally called. Prior to the establishment of the institution, midshipmen were instructed aboard ship by the chaplain, or, when they could be spared from ship-duty, by schoolmasters ashore; and promotions were made on satisfactory examinations at the U. S. Naval Asylum in Philadelphia The original purpose of the school was to gather the midshipmen on shore-duty or leave of absence, and give them special instruction in those practical studies with which neither naval chaplains nor land school-masters were expected to be familiar. In 1849 a board of officers was convened to reorganize the school and make it for the navy what the U. S. Milit. Acad. was for the army. As results, the name of the institution was changed to the present form, the course of study was fixed at 4 years, a war-vessel was assigned to the institution to increase the practical character of the curriculum and to afford means of an annual summer cruise, and the entire course of instruction was revised and enlarged. Gradually congress has increased the depts. of study; provided models, museums, workshops, mechanical apparatus and tools, philosophical, chemical, and astronomical appliances, and a great variety of practical aids; and lengthened the duration of the course of study to 6 years, as at present, of which 2 are spent at sea. Candidates for admission must be 14-18 years old; at least 5 ft. in height; of good moral character and sound physical condition; must undergo a physical examination, and an examination in algebra, arithmetic, English grammar, geography, U. S. history, reading, writing, and spelling; must take the oath of allegiance to the federal govt.; and must agree to serve the govt. for 8 years unless sooner discharged. Successful candidates receive appointments as naval cadets; are obliged to provide themselves with various articles of attire, and class-room, mess, and dormitory appurtenances, now aggregating in cost $200; have $60 per annum retained from their annual pay to meet the cost of their graduation outfit; and are allowed $500 per annum from the time of their appointment till their graduation, but have only a nominal control over the money. After leaving the acad., and while at sea in other than practice-ships, their pay is $950 per annum. Appointments to the Naval Acad. are made in the same manner and to the same number as to the U. S. Milit. Acad. (q.v.). In the academical year 1895-6 the curriculum comprised the departments of seamanship, naval instruction, and naval tactics; ordnance and gunnery; astronomy, navigation, and surveying; steam-engineering; mechanics and applied mathematics; physics and chemistry; mathematics; English studies, history, and law; modern languages; mechanical drawing; physiology and hygiene; and boxing, fencing, swimming, and gymnastics. By act of congress, 1889 the academic board annually separates the 1st class of cadets, then entering their 4th year, into two divisions, as they may have shown special aptitude for the duties of the respective corps; and thereafter these cadets pursue a course of study specially prepared to fit them for service in the line of the navy, the marine corps, and the engineer corps. Chief executive officers (1896) were a supt., with lineal rank of capt., and 2 assistants; a commandant of cadets, with rank of commander, and 6 assistants; and a commandant of marines. Nearly all the professors and instructors were regular officers of the navy on 4-year details. There were 65 professors and instructors; 247 cadets; 35,235 vols. in the library; grounds, buildings, and scientific apparatus valued at $965,250; and receipts from the govt. for maintenance, of $213,082.

UNITED STATES NAVY: national marine force, reorganized by act of congress 1798, under the official control of the pres. as commander-in-chief of the army and navy, and under the immediate orders of the sec. of the navy; also comprising the U. S. marine corps (see MARINES). For administrative purposes the executive dept. of the navy was divided 1895 into 8 bureaus—yards and docks, equipment, navigation, ordnance, construction and repair, steam engineering, supplies and accounts, and medicine and surgery—and had a law office under a judge-advocate-general. Each bureau was under the direction of an officer bearing the title of chief and having the relative rank of commodore, whatever his lineal rank might be, while holding the office, and the judge-advocate-general ranked as captain while holding his office. Besides regular duty, many officers were employed as members of the light-house board, as light-house inspectors, on the board of inspection and survey, on duty in connection with the inspection of steel and armor for new vessels, on the coast and geodetic survey, on the commission of fish and fisheries, on nautical school ships, at the naval acad., and as instructors in various colleges. In addition to commanding, staff, and line officers, there were officers of the medical, pay, and engineer corps, naval constructors (who have become exceedingly important since the building of the new navy was begun), professors of mathematics, civil engineers, and chaplains. The highest rank was rear-admiral, the rank of admiral and vice-admiral having ceased to exist, by operation of law, on the death of Admiral David D. Porter (q.v.) 1891 and Vice-Admiral Stephen C. Rowan (q.v.) 1890. In 1895 the personnel of the navy comprised 726 officers and 8,250 enlisted men and boys, and a marine corps of 2,177 officers and men. The active list comprised 6 rear-admirals, 10 commodores, 45 captains, 85 commanders, 74 lieut.-commanders, 250 lieutenants, 76 lieutenants of the junior grade, 173 ensigns, 15 medical directors, 15 medical inspectors, 51 surgeons, 56 passed asst. surgeons, 27 asst. surgeons, 13 pay directors, 13 pay inspectors, 40 paymasters, 70 chief engineers, 66 passed asst. engineers, 39 asst. engineers, 22 chaplains, 14 naval constructors, 12 professors of mathematics, and 12 civil engineers. Navy yards were maintained at Boston, Portsmouth, New York, Philadelphia, Washington, D. C., Norfolk, Pensacola, and San Francisco; naval stations at New London, Port Royal, Key West, and Port Orchard (or Sidney), Wash.; naval hospitals at Boston, New York, Philadelphia, Washington, Norfolk, San Francisco, and Yokohama, Japan; receiving ships at Boston, New London, New York, Philadelphia, Norfolk, and San Francisco; a naval war college and torpedo station at Newport; proving grounds for new ordnance at Indian Head, Md., and Sandy Hook, N. J.; a naval home at Philadelphia; a naval observatory at Washington; and public marine schools (in conjunction with municipal authorities) at Boston, New York, and Philadelphia. There were 5 cruising stations for vessels in commission, known as the N. Atlantic, Pacific, Asiatic, European, and S. Atlantic; and the names of these stations were given to the various squadrons among which the commissioned vessels were distributed. The development of the new navy occasioned a change in the rating and nomenclature of the vessels, and (1895) a renaming of the various parts of the vessel. While the rating and nomenclature are not as yet wholly fixed, it may be said that vessels of 5,000 tons and upward are rated as first-class and named after the states; and vessels of 3,000—5,000 tons are rated as second-class and named after cities. The pay of petty officers, enlisted men, and boys ranges from $70 per month (machinists) to $9 (third-class apprentices). Every officer, seaman, and marine in the navy has 20 cents per month deducted from his pay, which goes into a general fund for the support of naval hospitals. The pay of superior officers is according to the following table:

TABLE OF PAY ALLOWED BY LAW TO OFFICERS OF THE U. S. NAVY.

Rank.	At Sea.	On Shore Duty.	On Leave or Waiting Orders.
Rear-Admirals	$6,000	$5,000	$4,000
Commodores	5,000	4,000	3,000
Captains	4,500	3,500	2,800
Commanders	3,500	3,000	2,300
Lieutenant-Commanders:			
First 4 years after date of commission	2,800	2,400	2,000
After 4 " from " "	3,000	2,600	2,200
Lieutenants:			
First 5 years after date of commission	2,400	2,000	1,600
After 5 " from " "	2,600	2,200	1,800
Lieutenants (junior grade):			
First 5 years after date of commission	1,800	1,500	1,200
After 5 " from " "	2,000	1,700	1,400
Ensigns:			
First 5 years after date of commission	1,200	1,000	800
After 5 " from " "	1,400	1,200	1,000
Naval Cadets	900	700	500
Medical and Pay Directors and Inspectors and Chief Engineers	4,400	......	......
Fleet Surgeons, Paymasters, and Engineers	4,400	......	......
Surgeons, Paymasters, and Chief Engineers:			
First 5 years after date of commission	2,800	2,400	2,000
Second 5 " " " "	3,200	2,800	2,400
Third 5 " " " "	3,500	3,200	2,600
Fourth 5 " " " "	3,700	3,600	2,800
After 20 " from " "	4,200	4,000	3,000
Naval Constructors:			
First 5 years after date of appointment	......	3,200	2,200
Second 5 " " " "	......	3,400	2,400
Third 5 " " " "	......	3,700	2,700
Fourth 5 " " " "	......	4,000	3,000
After 20 " from " "	......	4,200	3,200
Chaplains:			
First 5 years after date of commission	2,500	2,000	1,600
After 5 " from " "	2,800	2,300	1,900
Professors of Mathematics and Civil Engineers:			
First 5 years after date of appointment	2,400	2,400	1,500
Second 5 " " " "	2,700	2,700	1,800
Third 5 " " " "	3,000	3,000	2,100
After 15 " from " "	3,500	3,500	2,600

UNITED STATES NAVY.

Officers are retired—after 40 years' service, or on attaining the age of 62 years, or from incapacity resulting from long service, wounds, injuries, exposure, or sickness received in or resulting from the discharge of duty—on 75 per cent. of the pay received at the time of retirement. Naval cadets, after leaving Naval Acad., *at sea*, in other than practice-ships, receive $950 per annum.

SHIPS OF THE U. S. NAVY AS REPORTED 1895, JAN. 1.

First Rate.

Name.	Displacement (tons).	Type.	Hull.	I. H.-P.	Propulsion.	Guns (main battery).
New York	8,200	a	S.	17,401	T. S.	18
Columbia	7,375	a	S.	18,509	Tr. S.	11
Minneapolis	7,375	a	S.	20,493	Tr. S.	11
Maine	6,682	a	S.	9,000	T. S.	10
Olympia	5,780	a	S.	17,313	T. S.	14
Second Rate.						
Baltimore	4,413	a	S.	10,064	T. S.	10
Chicago	4,500	a	S.	5,084	T. S.	14
Philadelphia	4,324	a	S.	8,815	T. S.	12
Monterey	4,084	b	S.	5,244	T. S.	4
Newark	4,098	a	S.	8,869	T. S.	12
San Francisco	4,098	a	S.	9,913	T. S.	12
Charleston	3,730	a	S.	6,666	T. S.	8
Miantonomoh	3,990	b	S.	1,426	T. S.	4
Lancaster	3,250	a	W.	733	S.	12
Atlanta	3,000	a	S.	4,030	S.	8
Boston	3,000	a	S.	4,030	S.	8
Cincinnati	3,213	a	S.	10,000	T. S.	11
Raleigh	2,213	a	S.	10,000	T. S.	11
Third Rate.						
Hartford	2,790	a	W.	2,000	S.	13
Ajax	2,100	b	I.	340	S.	2
Canonicus	2,100	b	I.	340	S.	2
Mahopac	2,100	b	I.	340	S.	2
Manhattan	2.100	b	I.	340	S.	2
Wyandotte	2,100	b	I.	340	S.	2
Detroit	2,094	a	S.	5,227	T. S.	9
Marblehead	2,089	a	S.	5,451	T. S.	9
Montgomery	2,094	a	S.	5,527	T. S.	9
Marion	1,900	a	W.	753	S.	8
Mohican	1,900	a	W.	613	S.	10
Camanche	1,875	b	I.	340	S.	2
Catskill	1,875	b	I.	340	S.	2
Jason	1,875	b	I.	340	S.	2
Lehigh	1,875	b	I.	340	S.	2
Montauk	1,875	b	I.	340	S.	2
Nahant	1,875	b	I.	340	S.	2
Nantucket	1,875	b	I.	340	S.	2
Passaic	1,875	b	I.	340	S.	2
Bennington	1,710	c	S.	3,436	T. S.	6
Concord	1,710	c	S.	3,405	T. S.	6
Yorktown	1,710	c	S.	3.392	T. S.	6
Iroquois	1,575	a	W.	1,202	S.	7
Dolphin	1,486	h	S.	2,253	S.	2
Adams	1,375	a	W.	550	S.	6
Alliance	1,375	a	W.	668	S.	8
Essex	1,375	a	W.	505	S.	8
Enterprise	1,375	a	W.	790	S.	6
Monocacy	1,370	a	I.	850	P.	6
Thetis	1,250	a	W.	490	S.	....
Castine	1,177	c	S.	2,199	T. S.	8
Machias	1,177	c	S.	1,873	T. S.	8
Alert	1,020	a	I.	365	S.	4
Ranger	1,020	a	I.	365	S.	4

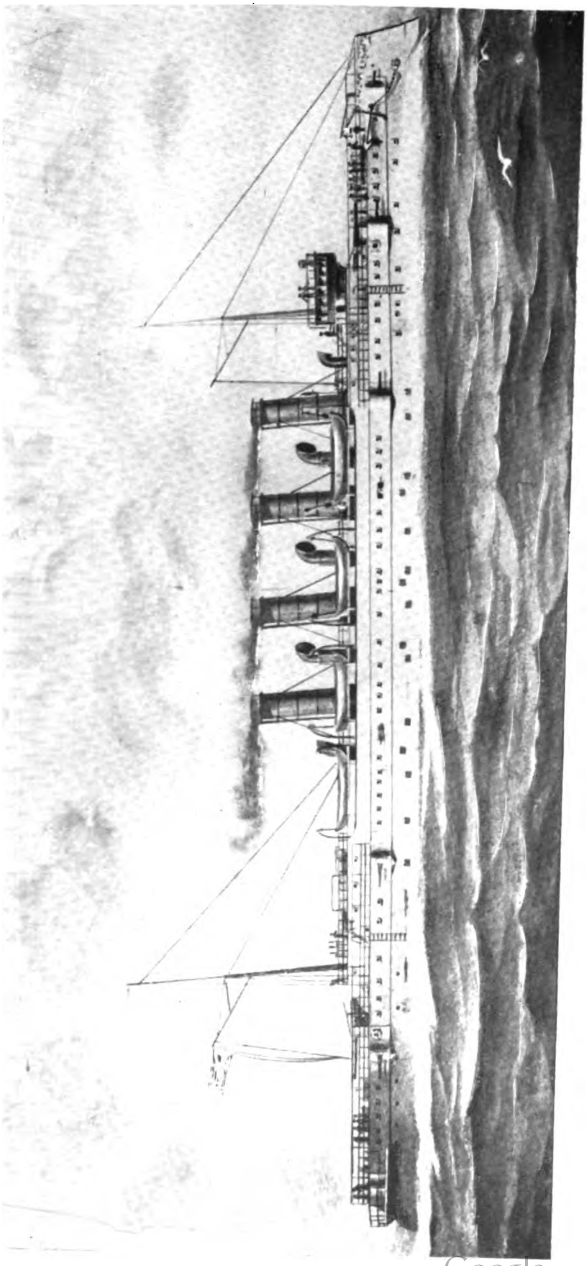
SHIPS OF THE U. S. NAVY AS REPORTED 1895, JAN. 1—*Continued.*

Fourth Rate.

Name.	Displacement (tons).	Type.	Hull.	I. H.-P.	Propulsion.	Guns (main battery.)
Vesuvius	929	j	S	3,795	T. S.	3
Yantic	900	a	W.	225	S.	4
Petrel	892	c	S.	1,095	S.	4
Fern	840	g	W.	....	S.	....
Bancroft	839	i	S.	1,213	T. S.	4
Michigan	685	a	I.	305	P.	4
Pinta	550	c	I.	190	S.	4
Torpedo-Boats.						
Alarm	800	..	I.	600	M. P.	....
Ericsson	120	..	S.	1,800	T. S.	....
Cushing	105	..	S.	1,720	T. S.	....
Stiletto	31	..	W.	359	S.	....
Sailing Ships.						
New Hampshire	4,150	..	W.	....	......	....
Monongahela	2,100	..	W.	....	......	6
Constellation	1,186	..	W.	....	......	8
Jamestown	1,150	..	W.	....	......	...
Portsmouth	1,125	..	W.	....	......	12
Saratoga	1,025	..	W.	....	......	....
St. Mary's	1,025	..	W.	....	......	....
Dale	675	..	W.	....	......	....
Receiving Ships.						
Franklin	5,170	..	W.	1,050	......	4
Minnesota	4,700	..	W.	1,000	......	9
Wabash	4,650	..	W.	950	......	....
Vermont	4,150	..	W.	....	......	1
Independence	3,270	..	W.	... .	......	6
Richmond	2,700	..	W.	692	......	14
Unserviceable.						
Pensacola	3,000	a	W.	680	S.	....
Omaha	2,400	a	W.	953	S.	....
Constitution	2,200	..	W.	....	Sails.	4
Swatara	1,900	a	W.	680	S.	....
Nipsic.	1,375	a	W.	839	S.	....
St. Louis	830	f	W.	....	Sails.	....
Under Construction.						
Iowa	11,410	d	S.	11,000	T. S.	18
Indiana	10,288	d	S.	9,000	T. S.	16
Massachusetts	10,288	d	S.	9,000	T. S.	16
Oregon	10,288	d	S.	9,000	T. S.	16
Brooklyn	9,271	a	S.	16,000	T. S.	20
Texas	6,315	d	S.	8,000	T. S.	8
Puritan	6,060	b	I.	3,700	T. S.	10
Amphitrite	3,990	b	I.	1,600	T. S.	6
Monadnock	3,990	b	I.	3,000	T. S.	6
Terror	3,990	b	I.	1,600	T. S.	4
Katahdin	2,155	e	S.	4,800	T. S.	.
No. 7	1,371	c	S.	1,750	T. S.	8
No. 8	1,392	c	S.	1,600	T. S.	8
No. 9	1,392	c	S.	1,600	T. S.	8

ABBREVIATIONS.—*Hull:* S., steel; I., iron; W., wood. I. H.-P., indicated horse power. *Propulsion:* S., screw; T. S., twin screw; Tr. S., triple screw: P., paddle: M. P., Mallory propeller. *Type:* a, cruiser; b, monitor; c, gun-boat; d, battle-ship: e, harbor defense ram; f, sailing ship; g, transport; h, dispatch boat; i, cadet practice vessel; j, dynamite gun vessel.

PLATE A.



U.S.S. Columbia.

United States Navy. PLATE B.

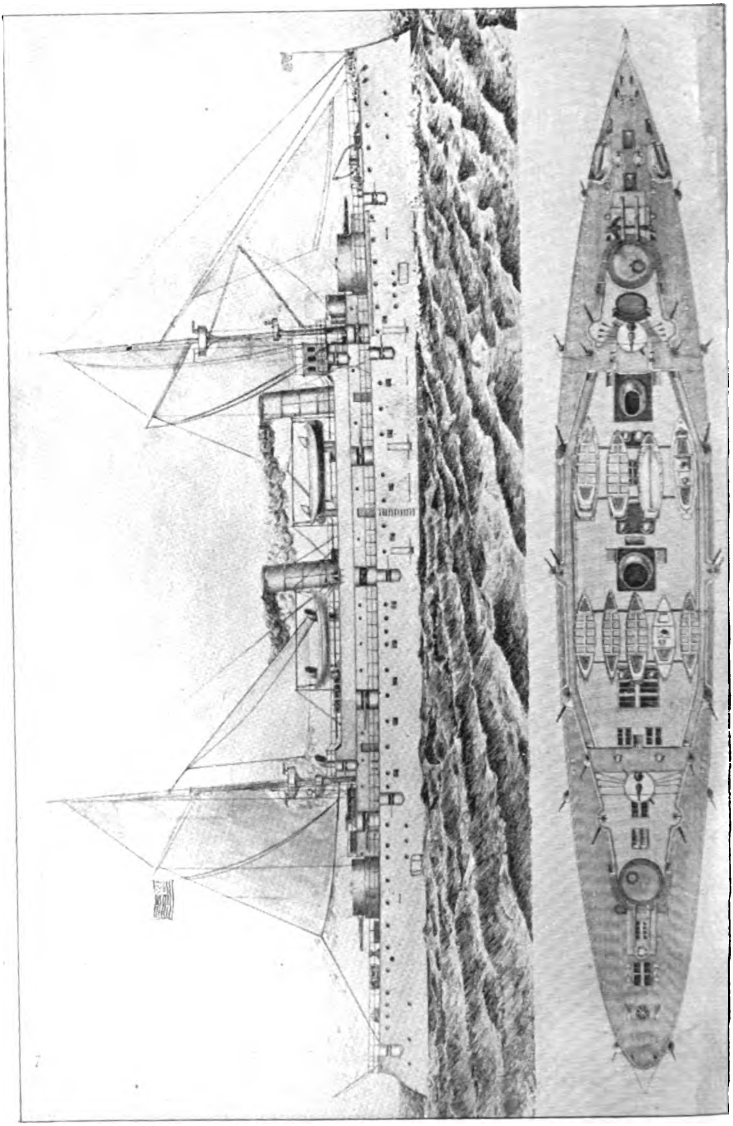
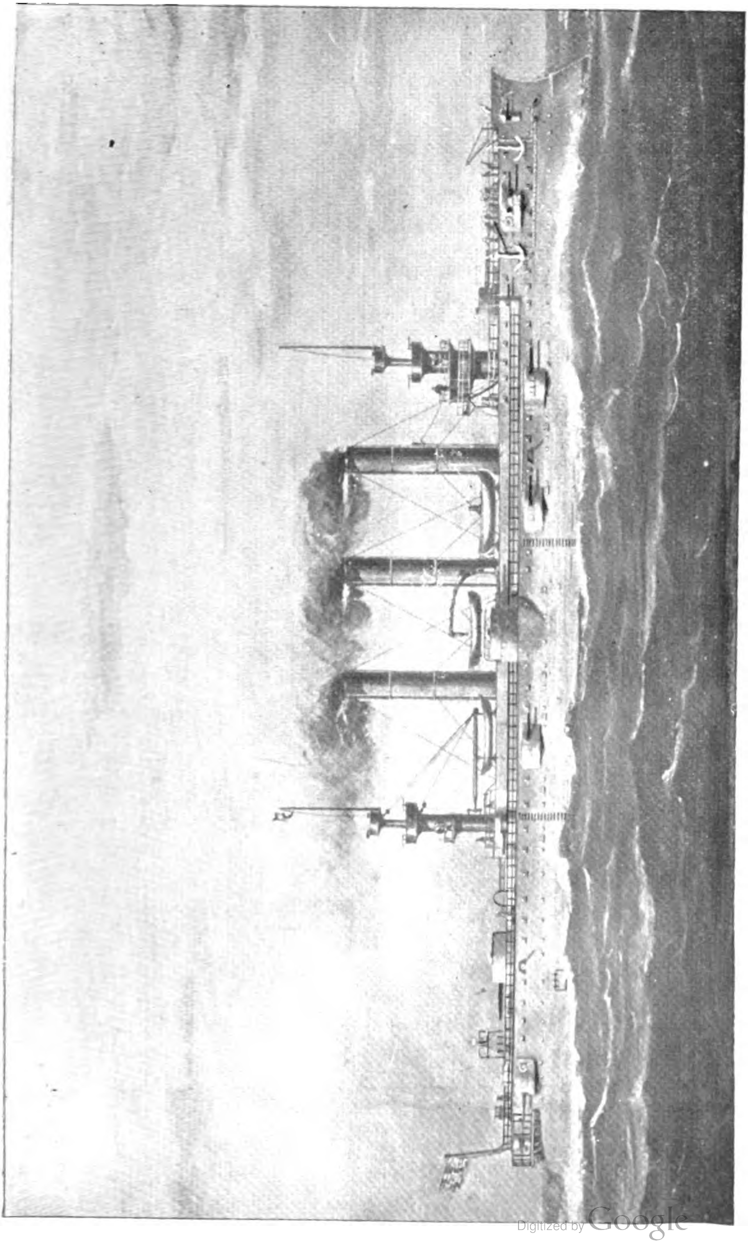


PLATE C. **United States Navy.**



U. S. S. Brooklyn.

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Naval Reserves.—In 1888 congress passed a bill authorizing the seaboard states to organize and maintain battalions of naval militia, which in time of war could be called into active service and assigned to duty in manning coast and harbor defense vessels and in operating torpedoes against hostile fleets, while the regular naval forces were engaged elsewhere. To encourage the formation of such battalions, the bill provided that they should be organized under the supervision of the military authorities of the states indicated; that they should become a part of the regular state militia; and that when a governor certified to the sec. of the navy that such a battalion had been regularly organized and incorporated with the militia of his state, the sec. should place at the disposal of the governor one of the vessels of the navy for the use of the battalion in acquiring thorough naval instruction. Under this law, naval militia had been organized in Mass., R. I., Conn., N. Y., Penn., N. J., Md., N. C., S. C., Ga., Cal., Ill., and Mich., up to 1895, July; and in Va., La., and other seaboard states organization was then in progress. Several states had two and three divisions each of their naval militia, and the following assignments of naval vessels had been made: Mass., the *Passaic;* Conn., the *Wyandotte;* N. Y., the *New Hampshire;* N. J., the *Portsmouth;* Penn., the *St. Louis;* Md., the *Dale;* N. C., the *Nantucket;* and Cal., the *Swatara.* The various battalions comprised over 3,000 officers and men, were composed of the best class of the young citizenship, and were commanded by officers nearly all of whom had had experience in the regular navy. The older battalions, those of Mass. and N. Y., had had practical instruction for several days on modern men-of-war, and had fully justified the belief that the system would provide an invaluable adjunct to the navy in time of war.

Navy Yards.—In 1897 there were 12 naval stations and 8 navy yards (besides marine barracks at Sitka, Alaska, and a naval hospital at Yokohama, Japan) as follows Portsmouth, N. H., naval station and navy yard; Boston, Mass., naval station, navy yard, and naval hospital; Newport, R. I., naval station, naval war college, and torpedo station; New London, Conn., naval station; New York, naval station, navy yard, and naval hospital; League Island, Penn., naval station, navy yard, naval hospital, and naval home; Washington, D. C., naval station, navy yard, and naval hospital; Norfolk, Va., naval station, navy yard, and naval hospital; Port Royal, S. C., naval station; Key West, Fla., naval station; Pensacola, Fla., navy yard; Mare Island, Cal., naval station, navy yard, and naval hospital; and Sidney, Wash., naval station.

UNITED STATES OF AMERICA, The: republic in N. America: bounded n. by the Dominion of Canada, e. by the Atlantic Ocean, s. by Mexico and the Gulf of Mexico, w. by the Pacific Ocean; with Alaska, bounded n. by the Arctic Ocean, e. by the British Northwest Territories, s. by the Pacific Ocean, w. by Behring Sea. It comprised (1896) 1 federal district, 45 states, and 5 territories, and was organized with 13 states, which, in the order of their ratification of the federal constitution, are: Del., Penn., N. J. Ga., Conn., Mass., Md., S. C., N. H., Va., N. Y., N. C., and R. I. The states, since admitted to the Union are, in the order of their admission, Vt., 1791, Mar. 4: Ky., 1792, June 1; Tenn., 1796, June 1; O., 1802, Nov. 29; La., 1812, Apr. 30; Ind., 1816, Dec. 11; Miss., 1817, Dec. 10; Ill., 1818, Dec. 3; Ala., 1819, Dec. 14; Me., 1820, Mar. 15; Mo., 1821, Aug. 10; Ark., 1836, June 15; Mich., 1837, Jan. 26; Fla., 1845, Mar. 3; Tex., 1845, Dec. 29; Io., 1846, Dec. 28; Wis., 1848, May 29; Cal., 1850, Sep. 9; Minn., 1858, May 11; Or., 1859, Feb. 14; Kan., 1861, Jan. 29; W. Va., 1863, June 19; Nev., 1864, Oct. 31; Neb., 1867, Mar. 1; Colo., 1876, Aug. 1; N. D. and S. D., 1889, Nov. 2; Mont., 1889, Nov. 8; Wash., 1889, Nov. 11; Ida., 1890, July 3; Wyo., 1890, July 11; Utah, 1896, Jan. 4. The federal dist., District of Columbia, was organized under acts of congress 1790, July 16, and 1791, Mar. 3. The territories are in the order of their organization: the Indian Terr. (without territorial govt.), 1834, June 30; New Mexico, 1850, Sep. 9; Arizona, 1863, Feb. 24; Alaska, 1868, July 27; and Okl., 1890, May 2.—For details concerning the states and territories, see their respective titles.

Location and Area.—Excluding Alaska (q.v.), the U. S. is in lat. 24° 20′—49° n., long. 66° 48′—124° 32′ w.; extreme width e. to w. 3,100 m.; extreme length n. to s. 1,780 m.; Atlantic coast-line 2,163 m., Pacific 1,343, Gulf of Mexico 1,764—total 5,270—total with islands, bays, and inlets 21,354 m.; n. land and water boundary (Brit. frontier) 3,475 m., s. land and water boundary 2,105 m., total ocean, land, lake, and river boundary 10,855 m. The gross area of Alaska is 577,390 sq. m. The following table shows the areas in sq. m. of the states and territories as determined by the 1890 census:

States and Territories	Gross Area.	Water Surface.	Land Surface	States and Territories	Gross Area.	Water Surface.	Land Surface.
Total*...	3,025,600	55,600	2,970,000	Ida.........	84,800	510	84,290
				Ill	56,650	650	56,000
Ala.........	52,250	710	51,540	Ind.........	36,350	440	35,910
Ariz.......	113,020	100	112,920	Ind. Terr..	31,400	400	31,000
Ark.	53,850	805	53,045	Io..........	56,025	550	55,475
Cal.	158,360	2,380	155,980	Kan... ...	82,080	380	81,700
Colo.	103,925	280	103,645	Ky.	40,400	400	40,000
Conn......	4,990	145	4,845	La	48,720	3,300	45,420
Del.........	2,050	90	1,960	Me.	33,040	3,145	29,895
D. C.......	70	10	60	Md.........	12,210	2,350	9,860
Fla.........	58,680	4,440	54,240	Mass.......	8,315	275	8,040
Ga	59,475	495	58,980	Mich.	58,915	1,485	57,430

* With Alaska, 3,602,990 sq. m.

States and Territories	Gross Area.	Water Sur-face.	Land Surface	States and Territories	Gross Area.	Water Sur-face.	Land Sur-face.
Minn......	83,365	4,160	79,205	R. I........	1,250	165	1,085
Miss.......	46,810	470	46,340	S. C.......	30,570	400	30,170
Mo........	69,415	680	68,735	S. D.......	77,650	800	76,850
Mont......	146,080	770	145,310	Tenn......	42,050	300	41,750
Neb.	77,510	670	76,840	Tex.	265,780	3,490	262,290
Nev.	110,700	960	109,740	Utah......	84,970	2,780	82,190
N. H.... ..	9,305	300	9,005	Vt..	9,565	430	9,135
N. J	7,815	360	7,455	Va.........	42.450	2,325	40,125
N. Mex....	122,580	120	122,460	Wash......	69,180	2,300	66,880
N. Y..	49,170	1,550	47,620	W. Va. ...	24,780	135	24,645
N. C.......	52,250	3,670	48,580	Wis........	56,040	1,590	54,450
N. D.... ..	70,795	600	70,195	Wyo..... ..	97,890	315	97,575
O..	41,060	300	40,760				
Okl.	39,030	200	38,830	Del. Bay ..	620	620	....
Or....	96,030	1,470	94,560	Raritan & Lower N. Y. Bays..	100	100	...
Penn	45,215	230	44,985				

Topography.—Two great systems of mountain ranges extend through the U. S.—the Appalachian on the e., and the Cordilleras on the w. The first has a general elevation of 300–1,000 ft., and an extreme width of 200 m.; and the other an elevation of from 4,000 to more than 12,000 ft. (in the Sierra Nevada), and an extreme width of 1,000 m. (see titles of the principal ranges). There are four principal divisions of rivers: n. lake, Atlantic, Pacific, and Gulf. The first embraces 184,339 sq. m. of territory; the second 304,538 sq. m.; the third 1,683,803 sq. m.; and the fourth 854,314 sq. m. (see titles of the principal rivers). The principal lakes are the cluster of five known as the 'Great Lakes,' and comprising Superior, Ontario, Michigan, Erie, and Huron (see each), and Lake Champlain (q.v.). See AMERICA.

Geology.—The e. geographical area, extending from the Atlantic Ocean to the Rocky Mountains, is occupied chiefly by Paleozoic rock, with a w. boundary of crystalline Eozoic formation; and the w. area, from the Rocky Mountains to the Pacific Ocean, shows the crystalline Eozoic overlaid by the Paleozoic limestones of the Carboniferous age, and the more recent Secondary and Tertiary formations, broken by eruptive rocks. The soil is of every variety, from the sterile deserts of the great w. plains and Utah to the inexhaustible fertility of the bottom-lands of the Mississippi valley, where heavy crops of maize have grown for 50 successive years without manuring. The Atlantic slope from Me. to N. J., e. of the Hudson, is hilly and but moderately fertile; more southerly, the coast-belt is low, sandy, in places swampy, with pine-barrens, the inland region fertile, and among the best in the country. The Mississippi valley is generally level, and prairie-land of unsurpassed fertility, with a rich mold, in places 25 ft. deep. N.w. the country rises to a high and sterile region, extending 200 to 400 m. from the base of the Rocky Mts. The Texas slope has rich bottom-lands on the coast, a fine rolling fertile country, rising to a high plateau which is dry and sterile except in river-bottoms. The Pacific slope is generally sterile, except the great valleys between the mountain ranges and bordering the rivers, which are of great fertility. The country e. of the Mississippi, except the prairies of Ill. and Ind., was, at its settlement, heavily wooded, and there are still vast forests of valuable timber in that region, as also in the south. W. of the 97th meridian stretches a vast region of almost treeless prairies; forests again occur in the Rocky Mts., and in Cal., Or., and Wash. For the flora and fauna, see the relevant sections in AMERICA (*Botany, Zoology, Geology*. etc.).

Mineralogy.—As appears from the table following, the United States is rich in mineral productions. Coal is found in every state except Me., N. H., Vt., N. J., Del., S. C., La., Miss., Minn., Wis., and Nev. The area of the coal-measures is estimated at 300,000 sq. m. The whole extent of the coal-area has been divided into four principal coal-fields or tracts—viz., the great central Alleghanian or Appalachian coal-field, extending from Ala., through e. Tenn. and Ky., W. Va., Md., O., and Penn. This field has been computed to cover 50,000 to 60,000 sq. m., of which about 40,000 sq. m. are considered workable. The second coal-field occupies the greater part of Ill. and Ind., and in extent is nearly equal to the first. A third field covers a large portion of Mo.; and the fourth, of Mich. The petroleum springs are a source of great wealth: see PETROLEUM. Beds of rich marl are found in several eastern states, and, in many, nitrates and carbonates of soda and potassia, gypsum, and marble of great variety, and some of rare beauty. Iron is found in all parts, from the pure metal in mountain masses to bog-ore; and in many places in close proximity to coal. Lead exists in rich deposits in Mo., Ark., Ill., Io., etc. Copper is found in several states, and in great quantities of ores of 71 to 90 per cent. on the borders of Lake Superior. Zinc occurs in N. J. and Penn. There are rich silver mines in Colo., Nev., Utah. N. Mex., Ariz., and Cal. Gold is found in small quantities in some of the Atlantic coast states; in great quantities in Cal., Or., Colo., Nev., Wash., Ariz., N. Mex., and Mont. There are also found platinum and mercury in Cal., osmium and iridium in Or., cobalt in N. C. and Mo.. and nickel in Conn. and Penn.

Climate.—For a particular account of the climate of the United States, see RAIN: TERRESTRIAL TEMPERATURE. It is remarkable for wide transitions of cold and heat, rain and drought, except in the peninsula of Fla., where the temperature varies but 12° F., and w. Or. and Wash., where the climate is more equable. With few exceptions, the summers are hot in both the north and south, the thermometer rising at times above 100° F.; and along the n. range of states sinking in winter to −20°, and even sometimes as low as −40°. The whole Atlantic coast has a winter temperature 10° lower than that of w. Europe in the same latitude. Thus, at New York, in the latitude of Madrid, the Hudson river is sometimes frozen, and the harbor filled with floating ice. In the w., from the shores of the Pacific to the Cascade Mts., the climate is mild and humid, with frequent showers at all seasons. But the great valley between the Cascade and the Rocky Mts. is almost entirely rainless, because the w. winds are drained of their moisture in crossing the Cascade Mts. before arriving there. In winter it is covered with snow, but in summer is dry and arid. However, the copious streams poured down from the melting snow give abundant facilities for irrigation, so that its capabilities and resources are great, when properly developed. The country e. of the Rocky Mts. depends for its rain on the Gulf of Mexico; and the rainfall there is distributed most in the low plains, and least on the plateaux and mountains. Hence over this extensive district southerly winds are warm and moist, and westerly and northerly dry and cold. The result is rapid alternations of temperature, occasionally through a range of 50° or 60° in the course of a day. In the New England states the n. and e. winds are moist and chilly, accompanied with frequent fogs. The climate of the states surrounding the great lakes in the n. is mild and moist in summer as compared with the other n. states; but in winter, when the lakes are frozen, a degree of cold is experienced greater, absolutely and relatively, than elsewhere in the country.

Mineral Productions.—The following table gives a summary of the mineral productions of the U. S. in the calendar year 1895, the latest reported by the U. S. geological survey office at the time of writing (see also GOLD: SILVER: ETC.):

Products.	Quantity.	Value.
METALLIC PRODUCTS.		
Pig-iron......................long tons	9.446.308	$105.198,550
Silver, coining value.........troy oz.	55.727,000	72.051.000
Copper, value New York..........lbs.	381.106.868	38,682.347
Gold, coining value............troy oz.	2,254,760	46,610,000
Lead, value New York........short tons.	161,440	10,655.040
Zinc, " " "........ " "	89,686	6.278,020
Quicksilver, value San Fran.......flasks.	36.104	1,337,181
Nickel, value Philadelphia..........lbs.	10,302	3,091
Aluminum, value Philadelphia....... "	920,000	464,600
Antimony, value San Fran...short tons.	450	68,000
Platinum, value New York......troy oz.	150	900
Total.............................	......	$281.348,679
NON-METALLIC (*values at mine, quarry, pit, etc.*)		
Bituminous coal...............long tons.	135,118,193	$115.749,771
Penn. anthracite............... " "	51,785,122	82,019,272
Building-stone..........................	....	34,688,816
Natural gas............................	....	13,006.650
Petroleum..........................bbls.	52,983,526	57,691,279
Cement........................ "	8,731,401	5,482,254
Salt.............................. "	13,669,649	4,423,084
Limestone (iron flux)..........long tons.	5,247,949	2,623,974
S. C. phosphate rock.......... " "	1,036,551	3,606,094
Mineral waters............gals. sold.	21,463,543	4,254,237
Zinc-white...................short tons.	20,710	1,449,700
Gypsum.................... " "	265,503	807,447
Borax..............................lbs.	11,918,000	595,900
Mineral paints...............long tons.	50.695	621.552

Products.	Quantity.	Value.
Asphaltum.....short tons.	68,163	$348,281
Manganese ore.....long “	9,547	71,769
Flint..... “ “	28,500	289,400
Pyrites..... “ “	99,549	322,845
N. J. marls.....short tons.	60,000	30,000
Crude barytes.....long “	21,529	68,321
Bromine.....lbs.	517,421	134,848
Corundum.....short tons.	2,102	106,256
Mica.....lbs.	....	55,831
Precious stones.....	....	118,621
Feldspar.....long tons.	12,900	119,775
Graphite.....lbs.	....	52,582
Fluorspar.....short tons.	4,000	24,000
Chrome iron ore.....long tons.	1,740	16,795
Cobalt oxide.....lbs.	14,458	20,675
Rutile..... “	100	850
Asbestos.....short tons.	795	13,525
Brick-clay.....	....	9,000,000
Other clays.....long tons.	360,000	800,000
Grindstones.....	....	205,768
Fibrous talc.....short tons.	39,240	870,895
Soapstones..... “ “	21,495	266,495
Oilstones.....	....	155,881
Monazite.....lbs.	1,578,000	187,150
Bauxite.....long tons	17,069	44,000
Sulphur.....short “	1,800	42,000
Fuller's earth..... “ “	6,900	41,400
Infusorial earth..... “ “	4,954	20,514
Millstones.....	....	22,542
Magnesite.....short tons.	2,300	17,000
Total.....	....	$339,882,044
Summary.		
Metallic products.....		$281,348,679
Non-metallic products.....		339,882,044
Mineral products unspecified.....		1,000,000
Grand total.....	....	$622,230,723

The following, among the products of 1880, are useful for comparison:

Products.	Quantity.	Value.
Iron.....short tons.	7,064,829	$20,470,756
Silver, coining value.....troy oz.	31,797,474	41,110,957
Gold, “ “ ..... “ “	1,614,741	33,379,663
Copper, value New York.....lbs.	55,825,024	8,886,295
Lead.....short tons.	53,140	2,102,948
Zinc..... “ “	123,868	2,079,737
Bituminous coal..... “ “	41,860,055	52,427,868
Anthracite coal..... “ “	28,621,371	42,139,740
Building-stone.....cubic ft.	110,807,463	11,809,522
Lime.....barrels.	26,048,000	24,615,360
Salt..... “	6,169,970	5,191,222
Minor minerals.....	....	3,387,444

Agriculture.—The production of the chief cereals from 1850 to 1890 is a vivid illustration of the growth of this basic industry.

	Bu. 1850.	Bu. 1860.	Bu. 1870.	Bu. 1880.	Bu. 1890.
Corn......	592,071,104	838,792,742	760,944,549	1,754,591,696	1,489,970,000
Wheat......	100,485,944	173,104,924	287,745,626	459,483,137	399,262,000
Oats......	146,584,179	172,643,185	282,107,157	407,858,999	523,621,000

UNITED STATES OF AMERICA.

The following table shows the acreage, production, and value of the principal farm crops in the calendar year 1896:

Crop.	Acreage.	Yield.	Value.
Corn	81,027,156	2,283,875,165 bu.	$491,006,967
Cotton	23,445,845		
Wheat	34,618,646	427,684,346 "	310,602,539
Oats	27,565,985	707,346,404 "	132,485,083
Rye	1,831,201	24,369,047 "	9,960,769
Barley	2,950,539	69,695,228 "	22,491,241
Buckwheat	754,898	14,089,783 "	5,522,339
Potatoes	2,767,465	252,234,540 "	72,182,350
Tobacco	594,749	403,004,320 lbs.	24,258,070
Hay	43,063,184	59,282,158 tons.	388,145,614
Total	218,639,618		$1,364,654,922

The number of animals reported on the farms and ranches 1897, Jan. 1, was as follows:

Animals.	Number.	Value.
Horses	14,364,667	$452,649,396
Mules	2,215,654	92,302,090
Milch Cows	15,941,727	369,239,993
Oxen and other cattle	30,508,408	507,929,421
Sheep	36,818,649	67,020,942
Swine	40,600,276	166,272,770
Total	140,449,381	$1,655,414,612

In 1890 the farmer furnished 74·2 per cent. of the total shipments abroad, the agricultural exports amounting to $627,216,656; and in the fiscal year ending 1896, June 30, he furnished 66·02 per cent., the exports of products of agriculture aggregating in value $569,841,714.

The U. S. government, through the dept. of agriculture, maintains (1897) a weather service bureau, publishes a large list of regular and special bulletins on every branch of the industry, and liberally promotes agricultural education in the states and territories.

By the aid of grants of public lands to the states and territories under act of congress 1862, July 2, 65 schools of science have been established in the U. S., known usually as agricultural and mechanical colleges (see EDUCATION, NATIONAL OR STATE: AGRICULTURAL EDUCATION). To facilitate the work and to encourage original investigation, experiment stations have been established as departments of these colleges in nearly all the states and territories under act of congress 1887, Mar. 2, which provided for an appropriation out of the proceeds of sales of public lands of $15,000 to each state and territory having such colleges and stations, for the year 1890, for an annual increase of $1,000 thereafter for 10 years, and for a subsequent annual appropriation of $25,000 to each state and territory.

Manufactures.—The following table gives a comparison of the manufacturing industries in 1880 and 1890; and details of the principal ones, arranged in the order of the value of output, in 1890, according to the revised census returns. In 1880 the total capital employed in manufacturing was $2,780,766,895; in 1890, $6,139,397,785.

Principal Industries.	Estab.	Hands employed.	Wages paid.	Cost of materials.	Value of products.
			$	$	$
All industries 1890...	355,401	4.711,832	2,282,823,265	5,158,868,853	9,370,107,624
All industries 1880...	253.852	2,732,595	947,953,795	3,396,823,549	5,369,579,191
Increase....	101,549	1,979,237	1,334,869,470	1,762,044,804	4,010,528,433
Flour.......	18,470	63,481	27,035,742	434,152,290	513,971,474
Meat packing........	611	40,409	23,491,101	366,993,662	433,252,315
Iron and steel......	645	152,535	84,665,506	295,777,843	430,954,348
Foundries & machine shops.....	6,475	247,754	148,989,063	171,145,156	412,701,872
Lumber, logs, etc..	21,011	286,197	87,784,433	231,555,618	403,667,575
Carpentering........	16,917	140,021	94,524,197	137,847,002	281,195,162
Cotton goods	905	221,585	69,489,272	154,912,979	267,981,724
Men's clothing, factories.	4,867	156,341	62,311,644	128,846,857	251,019,609
Boots and shoes......	2,082	139,333	66,375,076	118,785,831	220,649,358
Masonry, brick and stone	5,969	108,405	70,681,800	91,791,109	190,704,818
Plainingmill products..	3,670	86,888	48,970.080	104.926.834	183,681,552
Malt liquors	1,248	34,800	28,382,544	64,003.347	182,781,622
Newspapers	12,362	106.095	68,601,532	38,955,322	179,859,750
Leather	1,596	34,348	17,825,605	100,114,806	138,282,004
Woolen goods .	1,311	79,351	28,478.931	82,270,335	133,577.977
Cigars......	10,956	98,156	44,767,989	50,298,960	129,693,275
Steam railroad cars.	716	108,585	61,797,675	66,561,526	129,461,698
Bakeries....	10,484	52,762	28,789,047	72,507,579	128,421,535
Slaughtering only, wholesale	507	7,537	5,350,475	113,968,549	128,359,353
Men's clothing, custom . ..	13,591	86,143	48,551,108	50,494,637	126,219,121
Sugar and molasses refining...	393	7,529	2,815,275	107,758.811	123,118,259
Carriages & wagons...	8,614	73,453	40,198,522	47,805,565	114,570,555
Distilled liquors....	440	5.343	2,814.889	14,909,173	104,197,869

In the fiscal year ending 1896, June 30, the collections of internal revenue on taxable manufactures were: Distilled spirits, $80,670,070; tobacco, $30,711,629; fermented liquors, $33,784,235; oleomargarine, $1,219,432; playing cards $259,853; miscellaneous and penalties, $185,360—total, $146,830,615. The same sources yielded an aggregate of $143,421,672.02 in the year ending 1895, June 30. In 1896, Jan. 1, there were reported 30,072 single-account cigar factories, which used 93,639,212 lbs. of tobacco, and had an output of 4,099,137,855 cigars and 4,237,754,453 cigarettes;

and 3,256 other tobacco factories, which used 230,062,119 lbs. of leaf, 15,515,439 lbs. of scraps, 5,417,111 lbs. of stems, 33.605,007 lbs. of licorice, 24,957,041 lbs. of sugar, and 17,271,057 lbs. of other materials, and which had an output of 167,798,213 lbs. of plug tobacco, 13,265.329 lbs. of fine cut, 83,346,551 lbs. of smoking, and 9,882,456 lbs. of snuff. There were in operation 1,351 grain, 11 molasses, and 4,825 fruit distilleries; and in the year ending June 30, the production was 941,373,491 gals. of spirits; 17,856.632 gals. of rum; 3,403,852 gals. of fruit brandy; and 35,826,094 bbls. of fermented liquors. The production of oleomargarine was 50,853,224 lbs.—For further and later details and special manufactures and industries, see under the titles of the various states, territories, and cities.

Commerce.—During the year ending 1896, June 30, the total value of imports of merchandise into the U. S. was $779,710,024; value of domestic exports, $863,200,487; foreign exports, $19,406,451—total trade $1,662,316,962; imports of gold and silver coin and bullion, $44,827,035; exports, $172,172,092—total trade, $216,999,127; grand total trade, $1,879,316,089. Of this total trade $835,126,115, or 44 per cent. was with Great Britain and her colonies; $192,138.030 or 10 per cent. with Germany; and $117,190,406 or 6 per cent. with France. Of the domestic exports $506,478,394 or 58 per cent. went to Great Britain and her colonies. The exports of domestic manufactures were more than $40,000,000 greater than in any other year in our history. The following is a classification of the imports and exports of merchandise:

Groups.	Value.	Per cent.
IMPORTS.		
Free of duty:		
Articles of food and live animals..........	$123,674.270	33·45
Crude articles for domestic industry......	186.431,647	50·42
Articles manufactured—		
For mechanic arts....................	29,854.940	8·07
For consumption......................	20,496.034	5·54
Articles of voluntary use, luxuries, etc...	9.315,045	2·52
Total free of duty....................	369.771,936	100
Dutiable:		
Articles of food and live animals..........	113,321,659	27·64
Crude articles, etc......................	22.951,536	5·60
Articles manufactured—		
For mechanic arts....................	64,878.779	15·82
For consumption......................	124,778,005	30·44
Articles of voluntary use, etc............	84,008,109	20·50
Total dutiable........................	409.938.088	100
Free and dutiable:		
Articles of food, etc,.....................	236,995,929	30·38
Crude articles, etc......................	208,383,183	27·02
Articles manufactured—		
For mechanic arts....................	94.733,719	12·15
For consumption......................	145,274,039	18·50
Articles of voluntary use, etc............	93.323.154	11 97
Total imports of merchandise.........	779.710.024	100
Duties collected......................	160,534,351	

Groups.	Value.	Per Cent.
EXPORTS.		
Domestic:		
Products of agriculture	569,841,714	66·02
Manufactures	228,489,893	26·47
Mining	20,412,153	2·37
Forest	33,718,204	3·91
Fisheries	6,585,814	·76
Miscellaneous	4,152,701	·47
Total	863,200,479	100
Foreign:		
Free of duty	9,486,930	48·89
Dutiable	9,919,521	51·11
Total	19,406,451	100

During the year the entrances at the various ports aggregated, sailing tonnage 4,793,676, and steam 17,006,392; and the clearances, sailing tonnage 5,226,759, and steam 17,126,038.—For fuller details, see IMPORTS: EXPORTS: SHIPPING: ETC.: also under the titles of the various states, territories, and cities.

Railroads.—There are two authorities on railroad statistics in the U. S.—the Interstate Commerce Commission, which reports for fiscal years, and *Poor's Manual of Railroads,* which reports for calendar years, and there is necessarily a slight difference in their summaries. The total length of main track reported by the former, 1895, June 30, was 180,657 m.; and the latter reported, 1895, Jan. 1, a length of 179,279. Under the last date the details were: Liabilities: Capital stock, $5,075,629,070; funded debt, $5,665,734,249; unfunded debt, $383,567,232; and current debt, $440,669,656—total, $11,565,600,207: Assets: cost of roads and equipments, $9,789,543,001; real estate, stocks, bonds, and other investments, $1,667,879,162; other assets, $240,526,350; and current account, $226,502,371—total, $11,924,450,884: excess of assets over liabilities, $358,850,677. The total gross earnings of the year were $1,080,305,015, equal to 9·7 per cent. on the investment, and the net earnings were $322,539,276, or 2·9 per cent. on the capital. The rolling stock comprises 35,813 locomotive engines; 26,345 passenger cars; 7,937 baggage and mail cars; and 1,191,866 freight cars. Interest payments on bonds aggregated $237,731,567, and dividends paid on stocks, $85,278,669. During the year 583,248,007 passengers were carried and 675,129,747 tons of freight hauled; receipts from passenger traffic, $276,081,571, from freight traffic, $700,477,409.

The U. S. had more than one-half of the estimated railroad mileage of the world, and of the states and territories, Ill. ranked first with 10,576 m. of main track; Penn. second, 9,564; Tex. third, 9,272; Kan. fourth, 8,931; O. fifth, 8,652; Ia. sixth, 8,513, and N. Y. seventh, 8,150; all others had less than 8,000 m. each The above seven states had more than 35 per cent. of the total mileage of the country, though they contained less than 20 per cent. of the total area, excluding Alaska, and nearly 40 per cent. of the total population. During 1894 the new mileage amounted to 1,919·13 m., and 1895 to 1,831 m. net. In the foregoing the mileage is considered as showing the single-track length. If subsidiary tracks, as double and sidings, were included there would be a total exceeding 250,000 m.—For further and later details see RAILROADS; also under the titles of the states and territories.

Telegraph and Telephone.—In the period 1880–96 the length of telegraph lines in the U. S. increased from 85,645 m. to 189,918; the length of wire from 233,534 m. to 826,929; the number of offices from 9,077 to 21,725; number of messages from 29,215,509 to 58,760,444; receipts from $12,782,895 to $22,612,736; expenses from $6,335,415 to $16,714,756; and profits from $3,229,158 to $5,897,980. The greater part of the telegraph system is owned or controlled by the Western Union Telegraph Co. Other corporations operate about 40,000 m. of line. Excluding railroad, govt., private, and telephonic lines, there was (1897) an aggregate of over 220,000 m. of line open for public business.—The telephone service is practically conducted by the American Bell Telephone Co., which 1896 had capital $21,500,000; exchange 927; branch offices 686; wire on poles 260,324 m.; wire on buildings 12,861 m.; wire underground 184,515 m.; wire submarine 2,028; total length of wire 459,728 m.; circuits 237,837; employees 11,930; subscribers 281,695; and instruments under rental 674,976. The gross earnings during 1894 were $4,848,244; net earnings $3,123,785; receipts from rent of instruments $3,502,992; and dividends paid stockholders $3,000,000. See TELEGRAPH: TELEPHONE.

Religion.—There is no religion established by law in the U. S. or in any of the several states. Profession and practice of any and all religions are entirely free, so long as they do not disturb public order or infringe those social moralities or decencies which are regarded as essential in modern civilization. Christianity is held accountable to the same judgment as any other religious system. Nevertheless, the fact is undeniable that the nation is a Christian nation, not pagan, not Mohammedan, not atheistic. Christianity, though not established by law, is, and has been from the beginning, recognized in the national and state laws as an existing fact which by its very nature carried a stupendous moral force. The religion of the people who colonized North America could not but give shape and guidance to the constitutions of government which the people formed. The colonies of Christian folk founded here a nation which statistics show to be more generally Christian than it was a hundred years ago.

But it is only an extremely simple, broad, essential Christian religion that holds such legal recognition. Abhorrent to the whole spirit of our laws and of our people would be any rigid, narrow, sectarian, exclusive administration of the religious principle such as an established church would involve. The state is in no sense propagating or supporting Christianity; instead it is simply recognizing and using the great common Christianity as one of the grand supporting forces of the state, as seen in the general opening of legislative sessions, and in some states of judicial terms, with prayer; also in the appointment of chaplains in the army and navy and in penal institutions. Turning from the national or state religion—which the foregoing sentences merely state as a *fact* without reference to its desirableness or undesirableness—we look at the expression of Christianity which is made by the people in their individual capacity in the organizing and support of churches. Here we find an immense variety of denominations, whose clashing tenets have evidently been much softened during a single generation by the touch of Christian charity. By nearly all the leading sects from their beginning education has been earnestly fostered, especially in its higher lines. In recent years they have turned great effort and liberal contributions of money into the channels of philanthropy. SEE RELIGION: also the various denominations: SUNDAY SCHOOLS: MISSIONS, CHRISTIAN: CHRISTIAN ENDEAVOR, SOCIETY OF: BIBLE SOCIETY.

Denominations (1896).	Ministers.	Churches.	Members.
Adventists, 6 bodies	1,365	2,050	77,293
Baptists, 13 bodies	33,193	47,807	4,153,367
Brethren (River), 3 bodies	155	111	3,427
Brethren (Plymouth), 4 bodies	....	314	6.661
Catholics, 6 bodies	10,878	16,247	8,287,048
Catholic Apostolic	95	10	1,491
Christadelphians	....	63	1,277
Christians, 2 bodies	1,500	1,480	120,000
Christian Missionary Association	10	13	754
Christian Scientists	3,000	313	25,000
Christian Union	183	294	18,215
Church of God	450	560	36,000
Church of New Jerusalem	143	149	7,527
Communistic Societies, 7 bodies	....	31	3,950
Congregationalists	5,475	5,600	622,557
Disciples of Christ	5,360	9,607	1,003,672
Dunkards, 4 bodies	2,137	1,028	83.473
Evangelical, 2 bodies	1,260	2,154	148,783
Friends, 4 bodies	1,314	1,087	116,989
Friends of the Temple	4	4	340
German Evangelical Protestant	45	55	36.500
German Evangelical Synod	866	1,101	186,000
Jews, 2 bodies	290	548	139,500
Latter-Day Saints, 2 bodies	2,075	1,011	234,000
Lutherans, 19 bodies	5,993	10,022	1,420,905
Waldenstromians	140	150	20,000
Mennonites, 12 bodies	962	614	52,944
Methodists, 17 bodies	35,237	50,258	5,653,289
Moravians	123	109	13,614
Presbyterians, 12 bodies	11,154	14,559	1,460,846
Protestant Episcopal, 2 bodies	4,705	6,190	645,566
Reformed, 3 bodies	1,717	2,391	348.471
Salvationists, 2 bodies	2,570	825	40,000
Social Brethren	17	20	913
Society for Ethical Culture	... .	4	1,064
Spiritualists	....	334	45,030
Theosophical Society	....	122	3,000
United Brethren, 2 bodies	2,366	5,026	271.035
Unitarians	525	458	70,000
Universalists	797	825	49.025
Independent congregations	54	156	14,126
Total	136,957	183,698	25,423,643

Education.—In 1880 there were in the U. S. 203,650 elementary public schools, 5,430 high schools. and 16,800 separate schools of both kinds for colored children—total schools 225,880, and 164,832 public-school buildings, with aggregate seating capacity 8,968,731. There were enrolled in these schools 4,687,530 white male, 4,402,718 white female, 453,329 colored male, and 422,583 colored female pupils—total 9,946,160, of whom 5,715,914 whites and 560,484 colored (6,276,398) were in average daily attendance. Of teachers there were 96,099 white male, 124,086 white female, 10,520 colored male, and 5,314 colored female—total 236,019. The total value of public-school property was $211,411,540; receipts were $96,857,534, and expenditures (including $55,745,029 for teachers' salaries) $79,839,814.

In the school year 1894–5 (the last whose complete reports were available at the time of writing) the number of children 5–18 years old in the U. S. was estimated at 20,328,147; the number enrolled in the public schools of all ages was 14,201,752; and the number in average daily attendance was 9,387,507. Of teachers there were 128,376 male and 267,951 female—total 396,327, and of school-houses (excluding Alaska) 237,416. The estimated value of all public-school property was $439,071,690. The receipts were: from permanent funds and rents $8,336,612, state taxes $33,252,941, local taxes $119,019,984—total from all sources $177,597,691; and the expenditures: for sites, buildings, furniture, libraries, and apparatus $31,900,525, salaries of superintendents and teachers $113,664,874, miscellaneous $32,650,157—total $178,215,536. Of public high schools there were 4,712, with 14,122 teachers and 350,099 students. There were 155 public normal schools, 1,584 teachers, 36,491 pupils, and 5,492 graduates. The attendance at private and parochial schools was estimated at 1,211,220 (of whom 791,548 were in Rom. Cath. and 204,810 in Ger. Luth. parochial schools) making a total of 15,412,972 children in public, private, and parochial schools.

For secondary instruction there were 2,180 schools and 235,568 pupils. For the higher instruction of women there were reported 163 institutions, with 2,425 teachers, 24,193 students, 2,182 graduates, 438,433 volumes in libraries, $990,294 value of libraries and scientific apparatus; $14,929,696 in grounds and buildings; $5,177,767 in productive funds, $3,441,158 in total income, and $625,734 in benefactions.

Of colleges of liberal arts there were 481, which had 11,582 professors and instructors, 149,939 students, of whom 48,374 were in courses leading to degrees A.B., B.S., etc., 6,092,673 volumes in libraries, $15,258,111 value of libraries and scientific apparatus, $114,362,542 in grounds and buildings, $102,574,808 in productive funds, $16,783,638 in total income, and $5,350,963 in benefactions.

There were 51 schools of technology (31 of which were colleges of agriculture and mechanic arts endowed by acts of congress July 2, 1862, and Aug. 30, 1890), with 1,217 professors and instructors, 13,896 students, 446,681 volumes in the libraries, $3,291,942 value of libraries and scientific apparatus, $12,230,734 in grounds and buildings, $13,609,529 in productive funds, $3,965,593 in total income, and $21,530 in benefactions.

Professional instruction was provided as follows: *theology:* 149 schools, 906 professors and instructors, 8,050 students, 1,089,897 volumes in the libraries, $12,057,747 in grounds and buildings, $16,083,683 in benefactions; *law:* 72 schools, 604 professors and instructors, 8,950 students, 188,645 volumes in the libraries; *medicine: preparatory*, 2; *regular*, 113, with 2,938 instructors, 18,660 students, 56,071 volumes in the libraries, $8,130,422 in grounds and buildings, $749,992 in productive funds, and $95,260 in benefactions; *eclectic*, 9, with 187 instructors, 732 students, 5,072 volumes in the libraries, $344,000 in grounds and buildings; *homœopathic*, 20, with 476 instructors, 1,875 students, 23,816 volumes in libraries, $1,482,260 in grounds and buildings, $46,192 in productive funds, and $1,000 in benefactions; *graduate*, 7, with 462 instructors, 1,533 students, $779,588 in grounds and buildings. Other professional schools were: *dental*, 45, with 968 instructors, 5,347 students; *pharmaceutical*, 39, with 317 instructors, 3,859 students; *nurse training*, 131, students 3,985; and *veterinary*, 9, with 132 instructors, 474 students. For business and commercial education there were 462 schools, which had 2,201 instructors and 96,135 students.

For the deaf and dumb there were 69 institutions, which had 810 teachers, 9,114 pupils, 83,975 volumes in the libraries, and $1,984,503 expenditures; for the blind, 37 institutions, 545 teachers, 3,741 pupils, 73,172 volumes in the libraries, and $948,452 expenditures; for the feeble-minded, 28 institutions, 230 teachers, 7,380 pupils, and $1,348,710 expenditures; and for juvenile reformation, 80 institutions, 1,887 teachers, 19,862 pupils, and $3,422,760 expenditures.

The steady progress of education in the whole country is shown by the percentage of total school population (age 5 to 18) enrolled which was as follows: in 1870–71, 61·45 per cent.; 1879–80, 65·50 per cent.; 1889–90, 68·61 per cent.; 1894–95, 69·85 per cent.; the variations in sections were considerable. In all the New England and Middle states, also O., Ind., Mich., Ill., Wis., Minn., and Io., there has been either an actual decrease in the percentage of school population attending school since 1870, or in the cases of Mass., N. J., Ind., and Io. a very slight increase of 1·3 per cent. in Io. and N. J., and less than 1 per cent. in the others, the New England and Middle states showing an average reduction of nearly 7 per cent. The Southern states on the other hand show very great increases, averaging about 30 per cent since 1870, and only two of them, S. C. and La. have as small a proportion of children in school as R. I. The length of the school year has been steadily increased in all Northern states except N. Y. and O. which are the same, and in all Southern states except S. C., Miss., and Tex., where it has been decreased. The total expenditures in in proportion to population for school purposes have increased in every state except Miss., but the increase has been greatest in the Northern states. See **Education, National or State.**

UNITED STATES OF AMERICA.

National Finances.—The revenues and expenditures for the fiscal year ending June 30, 1896, were:

RECEIPTS.

Customs.—	
Fruits and nuts	$2,607,628
Rice	983,305
Sugar and molasses	29,888,322
Other articles of food and live animals	3,820,709
Articles in a crude state including ores, coal, coke, pig iron, hemp, flax, wool, etc.	4,017,952
Chemicals, drugs, etc	8,727,467
Furs	927,581
Tin plate	4,621,111
Iron or steel partly manufactured	1,135,924
Leather	874,071
Other partly manufactured products	3,577,753
Cotton, manufactures of	9,004,234
Earthen, stone, and china ware	3,563,436
Flax, hemp, etc., manufactures of	5,871,666
Glass and Glassware	2,875,827
Cutlery	1,046,954
Machinery	973,061
Other manufactures of iron and steel	1,057,962
Metals and composition other than iron	1,344,729
Leather, manufactures of	2,501,169
Carpets	805,580
Woolen cloths	9,646,354
Dress goods	9,620,517
Knit fabrics	1,172,744
Other manufactures of wool	1,282,633
Other manufactured articles	4,701,560
Cotton laces, embroideries, and edgings	5,472,798
Fancy articles, toys, perfumery, etc	2,061,373
Firecrackers	183,679
Flax and hemp lace edgings, etc	499,180
Jewelry and precious stones	1,215,015
Malt liquors	648,406
Distilled spirits	2,624,785
Wines	8,462,872
Musical instruments	328,640
Silk, manufactures of	12,126,438
Tobacco and manufacture of	14,859,117
Other miscellaneous manufactures	982,647
Additional and discriminating duties	908,907
Tonnage tax	560,068
Miscellaneous	2,448,178
Total customs revenue	$160,021,752
Internal Revenue.—	
Spirits	$75,827,898
Tobacco	30,711,629
Fermented liquors	33,139,141
Other internal revenue taxes	7,584,197
Postal Revenue	82,499,208
Miscellaneous	20,191,583
Total Receipts	$409,475,408

EXPENDITURES.

Civil establishment	$85,139,591
War department and rivers and harbors	52,947,075
Navy department including new vessels, etc	27,554,733
Pensions	139,434,001
Postal service	94,218,225
Interest on public debt	35,385,029
Total expenditures	$434,678,654
Deficit	25,203,246

See DEBT, NATIONAL: IMPORTS AND EXPORTS.

Banks.—Banking in the U. S. is conducted by national banks, organized under a national banking act of congress, and reporting to the U. S. comptroller of the currency;

circulating banks, incorporated under laws of the states and territories, reporting to the state and territorial authorities, and usually denominated 'state banks;' savings banks, both mutual and stock, deriving their functions from state and territorial legislatures; loan and trust companies, operating under state and territorial charters, and private concerns and individuals. In some states the savings banks, whether mutual or stock, are classified with the state banks. Neither the U. S. govt., any state or territorial govt., nor any town, city, village, or other political subdivision, can be interested as a stockholder in any banking concern; and national and state laws governing the management of banks and their investments are very strict, and, usually, closely enforced. The following summarizes the various banking institutions of the country, under dates of their last available reports:

National Banks: 1896, Oct. 6.—Number of banks in operation 3,676, combined capital stock $648,500,000, outstanding circulating notes $209,900,000, secured by U. S. bonds $237,300,000; total resources $3,263,700,000, of which $114,921,270 was gold coin, $19,706,620 gold treasury certificates, $26,096,000 gold clearing house certificates, and $40,084,642 silver coin and certificates, and $1,893,300,000 was outstanding on loans and discounts; individual deposits $1,613,100,000; surplus and undivided profits $336,400,000; total net earnings $49,742,318, yielding earnings of 5·53 per cent. on capital and surplus in year ending 1896, Sep. 1. The leading states in the number of banks were: Penn. (348); N. Y. (267); O. (223); Mass. (213); Tex. (202); Ill. (200).

State Banks: 1895, June 29.—Number of banks of circulation 3,774; combined capital $250,341,295; deposits $712,410,423; resources $1,147,545,818; surplus and undivided profits $111,042,346.

Loan and Trust Companies: 1894–5.—Number of companies 242; combined capital $108,963,905; deposits $546,652,657; resources $807,063,041; surplus and profits $84,801,698.

Savings Banks.—1895-6.—Number of banks, 988; depositors, 5,065,494; total deposits, $1,907,156,277; average due each depositor, $376.50; total resourses including capital stock and surplus, $2,143,307,163, of which $800,193,199 was loaned on real estate and $254,944,576 on other securities, $148,525,375 invested in U. S. bonds, $134.559,472 in railroad stocks and bonds, and $578,100,035 in state and other bonds and stocks.

Private Banks: 1895.—Number of banks 1,070; combined capital $33,281,845; deposits $81,824,932; resources $130,617,342; surplus and profits $1,018,349.

Combining all these institutions, the U. S. had an aggregate banking capital of $1,080,276,798, and an aggregate capital, surplus, profits, and deposits of $6,703,544,084, or $95.83 per capita, on an estimated population (1895, June 1) of 69,954,000. During the year ending 1895, Sep. 30, the exchanges at 78 U. S. clearing-houses amounted to $51,111,591,928, an increase of $6,083,095,182 over those of the previous corresponding year.—For further and later details, see under titles of the various states, territories, and cities; also BANKS IN THE UNITED STATES: BUILDING AND LOAN ASSOCIATION: CURRENCY: DEBT: FINANCE: MONEY. ETC.

Insurance.—Life: 1895, Jan. 1, there were 56 regular level premium companies in the U. S., which reported total assets $1,073,156,679; premium receipts $209,641,725; total income $261,959,111; total expenditures $182,290,595; new policies issued 5,135,109, amount $1,588,248,222; policies in force 8,702,393, amount $5,566,166,664. *Fire:* 1895, Jan. 1: stock companies 293, mutual 235; combined capital $71,446,660; assets exclusive of premium notes $351,072,971; net surplus $108,887,343; cash income $161,557,830; losses paid during year $94,646,618; dividends paid $12,592,356; total disbursements $160,251,738; risks written in year, estimated $16,000,000,000. *Assessment and Fraternal:* 1895, Jan. 1, companies 350; assets $54,907,024; assessments collected $81,019,799; total income $87,760,498; payments to policy holders $63,123,185; total expenditures $86,722,085; members 3,638,815; amount of insurance $7,482,286,000.—For fuller and later details, see INSURANCE: also under titles of the various states and of the fraternal organizations.

History.—The territories now occupied by the U. S., though they were probably visited on their n.e. coast by Norse navigators about the year 1,000, continued the sole possession of numerous tribes of Indians until the discovery of America by Columbus 1492. The coast from Labrador to Va. was explored by Sebastian Cabot 1498; Juan Ponce de Leon landed near St. Augustine, Fla., 1513, and explored a portion of that region. Some Spanish vessels from St. Domingo were driven upon the coast of Carolina 1520. By the conquests of Cortes and his followers, Mexico, including Texas, N. Mex., and Cal., became a province of Spain 1521. Ferdinand de Soto led a Spanish expedition from Fla. across Ala., and discovered the Mississippi river. Sir Walter Raleigh sent two expeditions 1584–5 to the coast of N. C., and attempted to form settlements on Roanoke Island. A Spanish settlement was made at St. Augustine, Fla., 1565. Jamestown, Va., was settled 1607; N. Y., then called the New Netherlands, by the Dutch 1613; Plymouth, Mass., by the Eng. Pilgrims (see PILGRIM FATHERS) 1620. A large part of the country on the great lakes and on the Mississippi was explored by La Salle 1682; and settlements were made by the French at Kaskaskia, Ill., and Arkansas Post, 1685; Mobile, Ala., and Vincennes, Ind., 1702: for the early history of the various colonies which now constitute the U. S., see the different states and territories. The first effort at a union of colonies was in 1643, when the settlements in Mass., N. H., R. I., and Conn. formed a confederacy for mutual defense against the French, Dutch, and Indians, under the title 'The United Colonies of New England.' They experienced the benefits of united action in 1754, when an English grant of lands to the Ohio Company brought on the French and Indian war—the French claiming, at that period, as the first explorers, northern New England, half of N. Y., and the entire Mississippi valley. George Washington was sent on his first expedition to remonstrate with the French authorities; and, the colonies being advised to unite for general defense, a plan for a general government of all the English colonies was drawn up by Benjamin Franklin; but it was rejected by both the colonies and the crown—by the colonies in their wish to preserve their separate independence, and by the crown from jealousy of their united strength. The colonists, however, took active part in the war. Under Major Washington, they joined Gen. Braddock in his unfortunate expedition against Fort Du Quesne, now Pittsburgh; they aided in the reduction of Louisburg, Ticonderoga, Crown Point, and Niagara; and rejoiced in the conquest of Quebec, by which the vast n. regions of America became the possessions of Great Britain: see FRENCH WAR (or OLD FRENCH WAR) IN NORTH AMERICA. (Also, for the earlier history, see titles of the respective explorers, places, and battles mentioned above.)

The principles of a representative government were brought to America by the earliest colonists. The colonies themselves were founded by private adventure, with very little aid from government. The Plymouth colony was for 18 years a strict democracy, and afterward a republic under a charter from the crown. It was not till the Protectorate and the reign of Charles II. that the colonies were considered as portions of the empire, to be governed by parliament, when navigation acts were passed to give English ships a monopoly of commerce, when the produce of the colonies was required to be sent to England, and duties were levied on commodities sent from one colony to another. Protests were made against these assumptions; Virginia asserted her right of self-government; and it was not until the English revolution of 1688 that settled and uniform relations were established between England and the colonies.

In 1713, by the treaty of Utrecht (see UTRECHT, PEACE OF), England, which, since the reign of Elizabeth, had imported slaves from Africa into her American and W. Indian colonies, obtained a monopoly of the slave-trade, engaging to furnish Spanish America, in 33 years, with 144,000 negroes. A great slave-trading company was formed in England, one-quarter of the stock being taken by Queen Anne, and one-quarter by the king of Spain, these two sovereigns becoming the greatest slave-dealers in Christendom. By this monopoly, slavery was extended in, and to some extent forced upon, all the Amer. colonies.

At this period there was a general feeling of loyalty toward the mother country. The sons of the more wealthy colonists, especially in the south, were educated in England; English literature pervaded the colonies; the British throne was the fountain of honor; the colonies, though distinct, and differing in origin and character—Puritan in in the east, Dutch Reformed in N. Y., Quaker in Penn., Rom. Cath. in Md., and Church of England in Va.—were yet united by language, common ties, fears, and interests.

In 1761 the enforcement of the navigation act against illegal traders, by general search-warrants, caused strong excitement against the govt., especially in Boston. The admiralty enforced the law; many vessels were seized; and the colonial trade with the W. Indies was annihilated. In 1765 the passing of an act of parliament for collecting a colonial revenue by stamps caused general indignation and led to riots. Patrick Henry, in the Va. assembly, denied the right of parliament to tax America, and eloquently asserted the dogma 'no taxation without representation.' The first impulse was to unite against a common danger; and the first colonial congress, of 28 delegates, representing 9 colonies, made a statement of grievances and a declaration of rights. The stamps were destroyed or reshipped to England, and popular societies were formed in the chief towns, called 'Sons of Liberty.' In 1766 the Stamp Act was repealed, to the general joy of the colonists; but the principle of colonial taxation was not abandoned; and, 1767, duties were levied on glass, paper, printers' colors, and tea. This renewed attempt produced, 1768, riot n Boston, and Gov. Gage was furnished with a military force of 700 to preserve order and enforce the laws. In 1773 the duties were repealed, excepting *3d.* a pound on tea. It was now a question of principle, and from north to south it was determined that this tax should not be paid. Some cargoes were stored in damp warehouses and spoiled; some sent back; in Boston, a mob, disguised as Indians, threw a cargo of tea into the harbor. To punish this outrage, parliament passed the Boston Port Bill, 1774, by which the chief town of New England was no longer a port of entry, and its trade transferred to Salem.

A fleet comprising several ships of the line, with 10,000 troops, was sent to America; while the colonists, though still asserting their loyalty, prepared to resist the unconstitutional assumptions of the govt. against the rights of British subjects. Volunteers were drilling in every direction, and depots of provisions and military stores were being gathered. A small force being sent from Boston to seize one of these depots at Concord, Mass., led to the battle of Lexington, the beginning of the war of the revolution, 1775, Apr. 19. [See—here and throughout this historical sketch—the respective titles of principal persons, places, and battles mentioned.] The British troops were attacked on their return, and compelled to a hasty retreat. The news of this event summoned 20,000 men to the vicinity of Boston. The royal forts and arsenals of the colonies were seized, with their arms and munitions. Crown Point and Ticonderoga, the principal northern fortifications, were surprised, and their artillery and stores appropriated. A congress of the colonies assembled at Philadelphia, which resolved to raise and equip an army of 20,000 men, and appointed George Washington commander-in-chief. Bunker Hill, in Charlestown, near Boston, where 1,500 Americans had hastily intrenched themselves, was taken by assault by the British troops 1775, June 17, but with so heavy a loss (1,054) that the defeat had for the provincials the moral effect of a victory. After a winter of great privations, the British evacuated Boston, carrying away in their fleet to Halifax 1,500 loyal families of refugees.

The British govt. now put forth a strong effort to reduce the colonies to submission. An army of 55,000, including 17,000 German mercenaries ('Hessians'), was sent, under the command of Sir William Howe, to put down this 'wicked rebellion.' The provincial congress, declaring that the royal authority had ceased, recommended to the several colonies to adopt 'such governments as might best conduce to the safety and happiness of the people;' and the 13 colonies soon adopted constitutions as independent states. 1776, June 7, Richard Henry Lee, of Va., offered a resolution in congress, declaring that 'the united colonies are, and ought to be, free and independent states; that they are absolved from all allegiance to the British crown; and that all political connection between them and the state of Great Britain is, and ought to be, totally dissolved.' This resolution, after earnest debate, was adopted by the votes of 9 out of 13 colonies. A committee, consisting of Thomas Jefferson, John Adams, Benjamin Franklin, Roger Sherman, and Robert R. Livingston, was instructed to prepare a declaration in accordance with the above resolution; and the celebrated Declaration of Independence, written by Jefferson, based on the equality of men and the universal right of self-government, and asserting that 'all government derives its just powers from the consent of the governed,' received (1776, July 4) the assent of the delegates of the colonies, which thus dissolved their allegiance to the British crown, and declared themselves free and independent states, under the general title of the United States of America—New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia—occupying a narrow line of the Atlantic coast between Canada and Florida, e. of the Alleghanies, with pop. about 2,500,000.

After the evacuation of Boston, Gen. Washington, with the remains of his army, thinned by the hardships of winter, hastened to New York. Gen. Howe, being joined by his brother, Admiral Lord Howe, and Sir Henry Clinton, found himself (July 2) at the head of 35,000 men; defeated the Americans on Long Island 1776, Aug. 27; compelled the evacuation of New York, and secured possession of its spacious harbor and the Hudson river. Gen. Washington, with inferior and undisciplined forces, retreated across N. J., closely followed by the English, hoping to save Philadelphia. Newark, New Brunswick, Princeton, were taken, and the British awaited the freezing of the Delaware to occupy Philadelphia. On Christmas night, Gen. Washington, by crossing in boats among floating ice, made a successful night-attack upon a Hessian force at Trenton, and gave new courage to the desponding Americans, who recruited the army, and harassed the enemy with a winter campaign.

In the mean time, Silas Deane and Benjamin Franklin had been sent to France to solicit recognition and aid. The recognition was delayed, but important aid was privately given in money and supplies, and European volunteers—the Marquis de Lafayette, Baron Steuben, Baron de Kalb, Kosciusko, and Pulaski rendering the most important services. Efforts were made to induce the British colonies of Canada and Nova Scotia to unite in the struggle for independence, and an expedition was sent against Montreal and Quebec, led by Generals Montgomery and Arnold. The Canadians refused their aid; Montgomery was killed, Arnold wounded, and the remains of the expedition returned after terrible sufferings. In 1777, after several severe actions in N. J., generally disastrous to the Americans, the British took possession of Philadelphia; and Washington, with the remnants of his army, went into winter-quarters at Valley Forge, where they suffered from cold, hunger, and nakedness.

While Washington was unsuccessfully contending against disciplined and overwhelming forces in N. J., Gen. Burgoyne was leading an army of 7,000 Brit. and German troops, with a large force of Canadians and Indians, from Canada into n. N. Y., to form a junction with the British on the Hudson, and separate New England from the rest of the revolted states. His march was delayed by felled trees and destroyed roads; his foraging expeditions were defeated; and after two sharp actions at Stillwater and Saratoga, with but three days' rations left, he was compelled to capitulate, 1777, Oct. 17; and England, in the midst of victories, heard with dismay of the loss of an entire army. The Americans gained 5,000 muskets, and a large train of artillery. Feeling the need of more unity of action, articles of confederation, proposed by Franklin, 1775, were adopted 1777: these constituted a league of friendship between the states, but not a government which had any powers of coercion.

Lord Carlisle was sent to America by the Brit. govt. with offers of conciliation 1778; but it was too late. France at the same time recognized American independence, and sent a large fleet and supplies of clothing, arms, and munitions of war to their aid: and Gen. Clinton, who had superseded Gen. Howe, finding his supplies at Philadelphia threatened, retreated to New York, defeating the Americans at Monmouth.

The repeated victories of the Brit. armies, the aid afforded by great numbers of Americans who still adhered to the royal cause and furnished during the war not less than 20,000 troops, and the alliance of large tribes of Indians, who committed cruel ravages in the frontier settlements, did little toward subjugating the country. Portions of the sea-coast of New England and Va. were laid waste; but the king's troops were worn out with long marches and tedious campaigns, and even weakened by victories. Spain, and then Holland, joined France in the war against England. Paul Jones, with ships fitted out in French harbors, fought desperate battles under the American flag off the English coast. But the king and parliament were determined to maintain the honor of the crown and the integrity of the empire. In 1780, 85,000 seamen were raised, and 35,000 additional troops sent to America, and a strong effort was made to subjugate the Carolinas, where the war became of a bitter partisan character, and was conducted with spirit by Sumter, Marion, and other southern chieftains. Lord Cornwallis, with a large army, marched from Charleston, through N. C., pursuing, and sometimes defeating the American Gen. Gates. Worn out with his success, he arrived in Va., where he was confronted by Gen. Lafayette. In the mean time, Admiral de Varney had arrived off the coast with a powerful French fleet, and 6,000 soldiers of the *élite* of the French army, under Count de Rochambeau. Cornwallis was obliged to fortify himself at Yorktown, blockaded by the fleet of Count de Grasse, and besieged by the allied army of French and Americans, waiting for Sir Henry Clinton to send him relief from New York. 1781, Oct. 19, he was compelled to surrender his army of 7,000 men—an event which produced such a change of feeling in England as to cause the resignation of the ministry, and the dispatch of Gen. Sir Guy Carleton to New York with offers of terms of peace. The preliminaries were signed at Paris, 1782, Nov. 30; and peace was concluded between England on one side, and France, Holland, and America on the other, 1783, Sep. 3. The independence of each of the several states was acknowledged, with a liberal settlement of territorial boundaries. In April, a cessation of hostilities had been proclaimed, and the Amer. army disbanded; New York, which had been held by the English through the whole war, was evacuated Nov. 25; Gen. Washington, Dec. 4, took leave of his companions in arms, and Dec. 23 resigned into the hands of congress his commission as commander.

From the retreat of Lexington, 1775, Apr. 19, to the surrender of Yorktown, 1781, Oct. 19, in 24 engagements, including the surrender of two armies, the Brit. losses in the field were not less than 25,000 men, while those of the Americans were about 8,000.

The states were free, but exhausted, with a foreign debt of $8,000,000, a domestic debt of $30,000,000, an army unpaid and discontented, a paper-currency utterly worthless, and a bankrupt treasury. The states were called on to pay their shares of the necessary expenditures; but they also were in debt, and there was no power to compel them to pay, or to raise money by taxation. In these difficulties, and in view of the failure of the articles of confederation, a convention was summoned by the congress 1787, to revise these articles. The task was so difficult that the convention resolved to propose an entirely new constitution, granting fuller powers to a federal congress and executive, and one which should act on the people individually as well as on the states. The constitution was therefore framed, which is still the basis of the government; and though it was strongly opposed by many, who believed that the extensive powers granted by it to congress and the executive would be dangerous to the liberties of the people, it was, 1787–8, adopted, in some cases by small majorities, in 11 state conventions, and finally by the whole 13 states, chiefly through the exertions and writings of James Madison, John Jay, and Alexander Hamilton: see CONSTITUTION OF THE UNITED STATES. Va. ratified the constitution with the declaration that she was at liberty to withdraw from the Union whenever its powers were used for oppression; and N. Y., after Hamilton had declared that no state could ever be coerced by an armed force. (For the political history of this important period, see POLITICAL PARTIES IN THE UNITED STATES: CONSTITUTIONAL CONVENTION: CONVENTIONS, NATIONAL POLITICAL.) George Washington and John Adams, standing at the head of the federalist party, which favored a strong centralized national govt., were elected pres. and vice-pres. of the U. S. under the new constitution. The pres. took the oath under the new constitution, on the site of the present sub-treasury building in Wall street, New York; and the govt. was organized with Thomas Jefferson, sec. of state; Alexander Hamilton, sec. of the treasury; Gen. Knox, sec. of war, and John Jay, chief-justice of the supreme court. Congress assumed the war debts of the several states, and chartered the Bank of the United States, though its constitutional right to do so was strenuously denied by the (then) republican or states'-rights party. Washington was reelected to the presidency 1792. The federalists took the side of England in the great European contest of that time, while the republicans sympathized with the French Revolution. There grew up also difficulties between the Eng. and Amer. governments. The Americans accused the English of carrying off large numbers of negroes and other property at the close of the war; while the English accused the Americans of sequestrating the property of loyalists, which they had engaged by treaty to restore to them. These controversies were happily settled by John Jay.

In 1796 Washington, worn and irritated by partisan conflicts and criticisms, refused a third election, and issued his farewell address to the people, warning them against the dangers of party-spirit and disunion, and of foreign alliances and entanglements, and giving them advice worthy of one who was said to be 'first in war, first in peace, and first in the hearts of his countrymen.' John Adams was elected pres.; and Thomas Jefferson, the second choice of the people for the presidency, became, according to the rule at first adopted, vice-pres. In 1798 the commercial regulations of France, and the assertion of the right to search and capture American vessels, nearly led to a war between the two republics; indeed the state of affairs has been termed 'the war with France.' The seat of govt. was removed, 1800, the year after Washington's death, to the city that he had planned for a capital, and which bears his name. John Adams, having lost popularity through his supposed partiality for England,

and for other reasons, failed of re-election; and Thomas Jefferson, the foremost man of the republican (now known as democratic) party was chosen pres. by the house of representatives, after 35 ballotings, with Aaron Burr for vice-pres. Tenn., Ky., Vt., and Ohio had now been organized as states, and admitted into the Union. In 1803, the area of the country was more than doubled by the purchase of Louisiana, which then comprised the whole region between the Mississippi and Rocky Mts., from France for $15,000,000. The infant navy waged a successful war with Tripoli. In 1805 Jefferson was elected for a second term; but Burr, having lost the confidence of his party, engaged in a conspiracy to seize the Mississippi valley, and found a new empire, with its cap. at New Orleans: he was tried for treason, but not convicted. The commerce of America was highly prosperous, her ships doing much of the carrying trade of Europe; but 1806, May, England declared a blockade from Brest to the Elbe, and Bonaparte, in Nov., decreed the blockade of the coasts of the United Kingdom. Amer. vessels were captured by both parties, and were searched by Brit. ships for Brit. subjects; and those suspected of having been born on Brit. soil, were—in accordance with the doctrine, once a subject always a subject—impressed into the naval service. Even U. S. men-of-war were not excepted from this process. The Brit. frigate *Leopard* meeting the U. S. frigate *Chesapeake*, demanded four of her men, and on refusal, fired into her, and the surprised *Chesapeake* struck her flag. Brit. ships were hereupon forbidden U. S. harbors.

Jefferson, declining a third term, was succeeded by James Madison 1809. The French decrees, prejudicial to neutral commerce, were revoked 1810; but the English decrees continued, a source of loss and irritation, while hundreds of Amer. citizens were in forced service in Brit. vessels. The feeling was increased by a night encounter between the U. S. frigate *President* and the Brit. sloop-of-war *Little Belt*, 1811, May 16. In 1812, Apr., an embargo was again declared by congress, preparatory to a declaration of war against Great Britain, July 19; for which congress voted to raise 25,000 regular soldiers, 50,000 vols., and 100,000 militia. Gen. Hull, with 2,000 men at Detroit, invaded Canada; but on being met by a small force of British and Indians, under Gen. Brock, recrossed the river, and made a shameful surrender: he was sentenced to death for his cowardice, but pardoned by the pres. A second invasion of Canada was made near Niagara Falls by Gen. Van Rensselaer. One thousand American militia stormed the heights of Queenstown, and the Brit. gen., Brock, was killed; but reinforcements arriving opportunely, the heights were retaken, and nearly all the Americans were killed or driven into the Niagara, while the Amer. gen. was in vain imploring a large body of militia on the opposite bank to cross over to the support of their brethren in arms. They refused, on the ground that the govt. had no constitutional right to send the militia beyond the frontier. The federal party, from the first opposed to the war, defended this doctrine: and Gen. Van Rensselaer resigned in disgust. Amer. disasters on the land were, however, compensated by victories at sea. 1812, Aug. 19, the U. S. frigate *Constitution* captured the Brit. frigate *Guerrière;* Oct. 18, the U. S. vessel *Wasp* took the *Frolic;* Oct. 25, the frigate *United States* captured the *Macedonian;* Dec. 29, the *Constitution* took the *Java*. In most cases the U. S. ships were larger and their ordnance was heavier; but the immense disparity in losses showed also superior seamanship and gunnery. Amer. privateers took 300 Brit. vessels and 3,000 prisoners. Gen. Proctor, 1813, crossed the Detroit river with a considerable force of British and Indians, and defeated Gen. Winchester, with the usual barbarous results of savage warfare. In April, an Amer. army of 1,700 men captured York (now Toronto), and about the same time another Amer. force of 800 men was defeated with great loss by the Indians under Tecumseh; but the remainder of this campaign was wholly favorable to the Americans. The attempt of the Brit. gen., Prevost, on Sackett's harbor was repulsed; the squadron on Lake Erie, consisting of 6 vessels, 63 guns, was captured by Commodore Perry at the head of a U. S. flotilla of 9 vessels, 54 guns; and this success enabled Gen. Wm. H. Harrison to invade Canada, where he defeated Gen. Proctor in the battle of the Thames, in which the great Indian warrior-chief Tecumseh was killed. In 1813 another invasion of Canada was attempted; and York (now Toronto) was again taken by Gen. Dearborn; and an unsuccessful attempt was made to take Montreal. Villages were burned on both sides. The Brit. also destroyed Amer. shipping in Delaware Bay. At the same period, Gen. Jackson defeated the Creek Indians in Ala. and Ga., who had been excited to make war on the frontier settlements.

In 1814 Generals Scott and Ripley crossed the Niagara, and sharp actions, with no decisive results, were fought at Chippewa and Lundy's Lane. A Brit. invasion, by Lake Champlain, by Gen. Sir George Prevost, with 14,000 men and a flotilla on the lake, was unsuccessful: Sep. 6, the flotilla was defeated and captured in the harbor of Plattsburg, while the army was repulsed on shore, and retreated with heavy loss. In Aug. a Brit. fleet ascended Chesapeake Bay, took Washington with slight resistance, and burned the govt. buildings. A subsequent attack on Baltimore was unsuccessful. New York, New London, and Boston were blockaded, and a large expedition was sent against Mobile and New Orleans. 1815, Jan. 8, Gen. Packenham advanced with 12,000 men against New Orleans, which was defended by Gen. Jackson, at the head of 6,000 militia, chiefly from Tenn. and Ky., aided by a small force of artillery, recruited from the Barataria pirates. The U. S. troops were sheltered by a breastwork of cotton bales, and the Brit. assault was met with so deadly a fire of riflemen, that it was repulsed, with the loss of Gen. Packenham and several officers, with 700 killed and 1,000 wounded; while the entire American loss appears to have amounted to only 71. This ill-planned and unfortunate action was fought more than a month after peace had been concluded between England and the U. S., and was followed by two naval actions in Feb. and March. Though during this war fortune at first favored the Americans on the high seas, it changed completely from 1813, June. June 1, the *Chesapeake* was taken by the *Shannon;* June 3, the *Growler* and *Eagle* were captured by Brit. gunboats; the *Argus* was taken by the *Pelican*, Aug. 14; the *Essex* by the *Phœbe* and *Cherub*, 1814, March 29: the *President* by the *Endymion*, 1815, Jan. 15; the only counterbalancing success being the sinking of the Brit. sloop-of-war *Avon* by the *Wasp*, 1814, Sep. 8. In 1814, Dec., federalists of New England held a convention of 25 delegates at Hartford in opposition to the war and the administration: see HARTFORD CONVENTION. Peace between the U. S. and Great Britain was concluded by the treaty of Ghent (q.v.) 1814, Dec. 24, ratified 1815, Feb. 17.

In 1815 Commodore Decatur, who had taken a distinguished part in the recent war, commanded an expedition against the Algerians—whose corsairs had preyed on American commerce in the Mediterranean—and dictated terms to Algiers, Tunis, and Tripoli.

The democratic-republican party having brought the war to a satisfactory conclusion, the federalists disappeared; James Monroe was elected to the presidency, almost without opposition, 1817, in 'the era of good feeling.' A rapid emigration from Europe and from the Atlantic states to the richer lands of the west, had in ten years added six new states to the Union. Difficulties arose with the warlike southern Indian tribes, whose hunting-grounds had been invaded; and Gen. Jackson, sent against the Seminoles, summoned to his aid the Tenn. volunteers who had served under him against the Creeks and at New Orleans, defeated them, pursued them into Fla., took Pensacola, and banished the Spanish authorities and troops. He was, however, supported in these high-handed measures by the pres.; and Fla. was ceded by Spain to the U. S. 1819. Ala. and Me., a slave and a free state, were added to the Union 1820; and the question of the admission of Mo. arose in congress—the question of its admission with or without slavery: see MISSOURI. At the period of the revolution, slavery existed in all the states except Mass.; but it had gradually been abolished in the n. and middle states, except Del., and excluded from the new states between the Ohio and Mississippi by the terms on which the territory had been surrendered by Va. to the Union. Under the constitution, slaves were not counted in full as a represented population; but by a compromise, three-fifths of their numbers were added to the whites. The slave states were almost exclusively agricultural, with free-trade interests. The free states were encouraging manufactures by protection. The two sections had already entered on a struggle to maintain the balance of power against each other. After an excited contest, Mo. was admitted, with a compromise resolution that in uture no slave state should be erected n. of the parallel of

36° 30′ n. lat.—the n. boundary of Ark. In the presidential election of 1824 there were four candidates—John Quincy Adams, Andrew Jackson, Henry Clay, and William H. Crawford. There being no choice by the people, the house of representatives chose Adams; John C. Calhoun being elected vice-pres. Party and sectional feeling became stronger. Adams and Clay, who had till then acted with the party of Jefferson and Madison, were henceforth identified with what was called the national republican, and later, the whig, which finally, in union with the anti-slavery party, became the republican party. Two of the founders of the republic, John Adams and Thomas Jefferson, died 1826, July 4, the anniversary of the Declaration of Independence—an event which made a profound impression. The four years of Adams's administration, during which there were violent contests on protection for Amer. manufactures and on the powers of the federal govt. to carry out public works within the states, ended with an excited election contest, which resulted in the triumph of the democratic party, and the election of Andrew Jackson, with John C. Calhoun as vice-pres. The bold, decisive, and impetuous character of Gen. Jackson was shown in a general removal of those who held office, down to small postmasters and public servants in the lowest grades, and the appointment of his own partisans. An act for the rechartering of the U. S. Bank was met by a veto of the pres., who declared it unconstitutional and dangerous. An Indian war, called the Black Hawk War, broke out in Wisconsin 1832; but the passing of a high protective tariff act by congress caused a more serious trouble. The state of S. C. declared the act unconstitutional, and therefore null and void, threatening to withdraw from the Union if an attempt were made to collect the duties on foreign importations. The pres. prepared to execute the laws by military force; Calhoun resigned his office of vice-pres., and asserted in the senate the doctrine of state-sovereignty, including the right of secession: see NULLIFICATION OF UNITED STATES LAWS. A collision seemed imminent, when the affair was settled by a compromise bill, introduced by Henry Clay, providing for a gradual reduction of duties, until 1843, when they should not exceed 20 per cent. *ad valorem.*

The popularity of Gen. Jackson caused his re-election by an overwhelming majority against Henry Clay, leader of the bank, protective tariff, and internal improvement party; and he entered on his second term with Martin Van Buren of New York as vice-pres. The removal of the govt. deposits from the U. S. Bank in Philadelphia to certain state banks, led to the failure of the bank, and after some years, to the adoption of Van Buren's plan of an independent treasury. The Cherokee Indians in Ga., who had attained a degree of civilization, appealed to the pres. for protection against the seizure of their lands by the state; but they were told that he 'had no power to oppose the exercise of the sovereignty of any state over all who may be within its limits;' and the Indians were obliged to remove to the territory set apart for them w. of the Mississippi. The Seminoles resumed war in Fla. 1835; and this tribe of Indians, insignificant in numbers—being in an almost inaccessible region of forest-swamps, and under the crafty leadership of Osceola (q.v.)—kept up hostilities for years, at a cost to the U. S. of several thousands of men and $50,000,000. Martin Van Buren succeeded Gen. Jackson in the presidency 1837. His term of four years was a stormy one, from the great financial crisis of 1837, which followed a period of currency-expansion and wild speculation. All the banks suspended payment, and the great commercial cities threatened insurrection. Van Buren was firm in adhering to his principle of collecting the revenues of the govt. in specie, and separating the govt. from all connection with the banks. His firmness in acting against the strong sympathies of the n. and w. states with the Canadian insurrection of 1837–8, also damaged his popularity; and 1840, the election of Gen. William Henry Harrison, with John Tyler for vice-pres., was one of unexampled excitement, characterized by immense popular gatherings, political songs, the use of symbols, and the participation of both sexes to a degree before unknown in America. The whigs triumphed in nearly every state; Gen. Harrison was inaugurated 1841, Mar. 4, and the rush to Washington for offices was as great as the election had been exciting and remarkable. Worn down with the campaign and the office-seekers, Gen. Harrison died in a month after his inauguration, and was succeeded in office by the vice-pres., John Tyler, who, having been a democrat, was no sooner in power than he reverted to his former political principles. He vetoed a bill for establishment of a national bank and other measures of the party by which he had been elected. His cabinet resigned, except Daniel Webster, sec. of state; and others, democratic or neutral, were appointed in their place. During Tyler's administration, the n.e. boundary question, which nearly occasioned a war with England, was settled by Daniel Webster and Lord Ashburton; a difficulty, amounting almost to a rebellion, was settled in Rhode Island (q.v.); but the most important question agitated was that of the annexation of Tex. This annexation was advocated by the south, as a large addition to southern and slave territory; and, for the same reason, opposed by the whig and anti-slavery parties of the north. Besides, the independence of Tex., though acknowledged by the U. S., England, and France, had not been acknowledged by Mexico, and its annexation would be a *casus belli* with that power. The recent admissions of Io. and Fla. into the Union had kept the balance of power even between north and south, but Tex. would be an advantage to the south. But the gain of territory, and a contempt for Mexico, overcame these objections, and, 1845, Texas was formally annexed to the U. S.; and James K. Polk of Tenn. succeeded Tyler in the presidency.

Almonte, the Mexican minister at Washington, protested against the annexation of Tex., as an act of warlike aggression, and to guard against a threatened invasion of Tex., Gen. Zachary Taylor was ordered with the U. S. troops of his milit. district to its s. frontier. The Mexicans crossed the Rio Grande, and commenced hostilities, 1845, Apr. 26. Gen. Taylor moved promptly forward, and won the victories of Palo Alto, Resaca de la Palma, Monterey, Saltillo, and finally, against great odds—20,000 to 4,759—the hard-fought battle of Buena Vista, a victory that excited great enthusiasm. In the mean time, Gen. Wool had been sent on an expedition to Chihuahua, in n. Mexico; Gen. Kearny to New Mexico; and Capt. Fremont and Commander Stockton took possession of Cal. 1847, Mar. 9, Gen. Scott landed at Vera Cruz, which he took on the 29th, after a siege and bombardment by land and water. Marching into the interior with a force of about 9,000 men he found Gen. Santa Anna intrenched on the heights of Cerro Gordo with 15,000 men. Apr. 18, every Mexican position was taken by storm, with 3,000 prisoners, 48 cannon, 5,000 stand of arms, etc. Waiting at Puebla for reinforcements until Aug., Gen. Scott advanced with 11,000 men toward Mexico city, near which Gen. Santa Anna awaited him with large forces and in strong positions. On Aug. 19 and 20 were fought the battles of Contreras and Churubusco, in which 9,000 Americans vanquished an army of over 30,000 Mexicans in strongly fortified positions. After a brief armistice, hostilities recommenced Sept. 7; and after a series of sanguinary actions, the American army, reduced to about 8,000, entered the city of Mexico; which ended the war. By the treaty of Guadalupe, the U. S. obtained the cession of N. Mex. and Upper Cal., the U. S. paying Mexico $15,000,000, and assuming the payment of the claims of American citizens against Mexico. The opposition to the annexation of Tex., and to the war and the acquisition of the newly-acquired territory, now became complicated and intensified by sectional feelings and the opposition to slavery. The northern party demanded that slavery should never be introduced into territories where it had not existed; the south claimed the right of her people to emigrate into the new territories, carrying with them their domestic institution: see FUGITIVE SLAVE LAW. During the debates in congress on the acquisition of the Mexican territories, David Wilmot of Penn. introduced an amendment, called the 'Wilmot Proviso,' providing that there should be neither slavery nor involuntary servitude in the acquired territory: this was voted down, but became a party principle. In 1849, Gen. Taylor, the 'Rough and Ready' victor of Buena Vista, became pres., with Millard Fillmore as vice-pres. The free-soil party (see POLITICAL PARTIES IN THE UNITED STATES) had nominated Martin Van Buren for pres., with Charles Francis Adams for vice-pres.; the democratic candidate being Gen. Lewis Cass. The liberty party in 1840 had cast 7,609 votes; in 1844 it had 62,300; Van Buren (1848) received 291,263, so rapid was the growth of a party soon destined to control the policy of the government. 1849, Sep. 1. Cal., rapidly peopled by the discovery of gold, adopted a constitution which prohibited slavery. Violent struggles and debates in congress followed, with threats of southern secession, and protests against interference with slavery. The comparatively few zealous abolitionists of the north denounced the constitution for its support of slavery, and its requirement of the return of fugitive slaves to their owners. The south denounced the violation of the constitution by interference with slavery—a domestic institution of the states—the carrying off of negro slaves secretly by organized societies, and by what was termed the 'underground railway,' and the passage of personal liberty bills in several states, which defeated the Fugitive Slave Law (q.v.) and the requirements and guarantees of the constitution. Henry Clay introduced a compromise into congress, admitting Cal. as a free state, and introducing a new and more stringent law for rendition of fugitive slaves: see COMPROMISE MEASURES OF 1850. Pres. Taylor, more used to the rough life of a frontier soldier than the cares of state, died 1850, July 9, and was succeeded by the vice-pres., Millard Fillmore.

The election of Franklin Pierce 1852, against Gen. Scott, was a triumph of the democratic, states'-rights, and southern party. Jefferson Davis, a senator from Mississippi, son-in-law of Gen. Taylor, and who had served under him in Mexico, was appointed sec. of war. New elements were added to the sectional controversies which agitated the country by the repeal of the Missouri Compromise, and the passage of the Kansas-Nebraska Bill of Senator Douglas, which left the people of every territory, on becoming a state, free to adopt or exclude the institution of slavery: see also DRED SCOTT CASE. The struggles of Kansas, approaching a civil war between the free-soil and pro-slavery parties in that rapidly growing territory, resulted in the exclusion of slavery. A brutal assault on Charles Sumner, senator from Mass., by a southerner, named Preston Brooks, in consequence of a violent speech on s. men and institutions, increased the excitement of both sections. The publication 1852 of Mrs. Harriet E. Beecher Stowe's *Uncle Tom's Cabin*, aroused so intense and universal interest in the slavery question that the book must be reckoned one of the factors in the developing political struggle. The formation of an anti-foreign and no-popery party, called the 'know-nothing' party acting chiefly through secret societies, was a singular but transient episode in American politics; though, by breaking up old party affiliations, it doubtless influenced the succeeding election.

In 1856, the republicans, composed mainly of the free-soil party, with some of the less extreme abolitionists, nominated John C. Fremont for the presidency; while the democratic and states'-rights party nominated James Buchanan. Ex-pres. Fillmore received the 'know-nothing' nomination. The popular vote was—for Buchanan, 1,838,169; Fremont, 1,341,264; Fillmore, 874,534. Buchanan was inaugurated 1857, Mar. 4, with John C. Breckinridge, afterward a gen. of the Confederate army, as vice-pres. A difficulty with the Mormons, which caused the pres. to send a milit. force to Utah, was settled without bloodshed. The efforts of the govt. to execute the Fugitive Slave Law kept up an irritated feeling. There were savage and bloody fights between the pro-slavery and anti-slavery parties in Kansas and on the w. borders of Mo. Resolute and well-armed settlers were sent out by New England emigration societies. 1859, Oct., John Brown, known in Kan. as 'Ossawatomie Brown,' who, with his sons, had been engaged in the struggles in Kan., planned and led an expedition for freeing the negroes in Va. He made his attempt at Harper's Ferry, on the Potomac, where, after a vain attempt to induce the negroes to join him, he and his small party took possession of one of the govt. workshops, where he was taken prisoner by a party of U. S. soldiers, and handed over to the authorities of Va., tried and hanged Dec. 2. His body was taken to his home in N. Y. for burial; and he was regarded by the abolition party as a martyr.

In 1860, the democratic party, which, except at short intervals, had controlled the federal govt. from the election of Jefferson 1800, became hopelessly divided. The southern delegates withdrew from the convention at Charleston; and two democratic candidates were nominated, Stephen A. Douglas of Ill. and John C. Breckinridge of Ky.; while the republicans, or united whig and free-soil party, nominated Abraham Lincoln of Ill.; and the native or 'American' party nominated John Bell of Tenn. The republican convention adoped a moderate and even conservative platform, denounced the John Brown raid, and put forward as a principle, 'the maintenance inviolate of the rights of the states, and especially the right of each state to order and control its own domestic institutions according to its own judgment exclusively.' Still, as the republican party had taken firm stand against further extension of slavery to new states, the country was sectionally divided.

At the election 1860, Nov., Abraham Lincoln received every northern vote in the electoral college except the three of N. J., which were given to Douglas, 180 votes; while Breckinridge received the 72 electoral votes of the south. The north and south had been arrayed against each other, and the south was defeated. Of the popular vote, Lincoln received 1,857,610; Douglas 1,365,976; Breckinridge 847,951; Bell, 590,631. Thus, while Lincoln gained an overwhelming majority of the *electoral* votes given by each state, the combined democratic ballots cast by voters exceeded his by 356,317, and the whole popular vote for other candidates exceeded that for him by 946,948. A small majority, or even plurality, in the northern states was sufficient to elect him.

The south lost no time in acting on what her statesmen had declared would be the signal of their withdrawal from the Union. On Nov. 10, as soon as the result was known, the legislature of S. C. ordered a state convention, which assembled Dec. 17, and on the 20th unanimously declared that 'the union now subsisting between S. C., and other states, under the name of the United States, is hereby dissolved;' giving as a reason that 14 of these states had for years refused to fulfil their constitutional obligations. The example of S. C. was followed by Miss. 1861, Jan. 8; Fla., 10th; Ala., 11th; Ga., 19th; which were followed by La., and Tex.; and by N. C., Va., Tenn., and Ark. Ky. and Mo. were divided, and had representatives in the govts. and armies of both sections.

1861, Feb. 4, delegates from the 7 then seceded states met at Montgomery, Ala., and formed a provisional govt. under the title the Confederate States of America. A constitution was adopted similar to that of the U. S., and the govt. fully organized, Feb. 18; pres., Jefferson Davis of Miss.; vice-pres., Alexander H. Stephens of Ga.: the govt. was established at Richmond, Va. The secession movement appears to have been nearly unanimous in the more southern states, and to have been carried in all by decided majorities. As state after state withdrew from the Union, its senators and representatives in congress at Washington resigned their seats: and nearly all the officers of the army and navy, of southern birth—believing that their first and final allegiance was due to their states, and that the action of each state carried with it all its citizens—also resigned their commissions, and tendered their swords to their respective states, and to the Confederacy that those states had formed.

Pres. Buchanan, doubting his constitutional power to compel the seceding states to return to the Union, made a feeble and ineffectual attempt to relieve the garrison of Fort Sumter, in Charleston harbor, closely besieged by the forces of S. C. Commissioners were sent to Washington to negotiate for the settlement of the claims of the Federal govt., and great efforts were made to effect compromises of the difficulties, but without result.

1861, Mar. 4, Pres. Lincoln was inaugurated at Washington. In his address he said: 'I have no purpose, directly or indirectly, to interfere with the institution of slavery in the states where it exists. I believe that I have no lawful right to do so, and I have no inclination to do so.' The opening of hostilities was precipitated by the setting out from New York of an expedition with provisions and reinforcements for the garrison of 75 soldiers in Fort Sumter, in Charleston harbor: the unarmed vessel was fired upon and compelled to withdraw. These were the first shots of the civil war. The surrender of the fort was demanded and refused Apr. 11; and the batteries around Sumter, manned by S. C. gunners, opened fire on the fort Apr. 12; and, after a bombardment of 36 hours, the U. S. commander was forced to surrender the place 1861, Apr. 14. The firing on the U. S. flag, and the fall of Ft. Sumter, 'fired the northern heart;' Pres. Lincoln's call for 75,000 vols. to serve 90 days was answered with alacrity—three times that number of men offering themselves. Public sentiment was greatly consolidated in the north for support of the Union and suppression of the rebellion: in the south.

men who had wavered between secession and adhesion to the Union were carried into approval of their states' ordinances of secession: the call of the pres. of the Confederacy for troops, like that of Pres. Lincoln, met cordial response. The border states, Mo., Ky., Md., essayed to be neutral: Del. from the first cast her lot with the Union. The first blood was shed in Baltimore, Apr. 19, when a Mass. regt., on its way to defend Washington, was attacked by a mob. By this time the Confederates had collected a force at Manassas Junction, Va., about 30 m. from Washington, and their line of defense held the left bank of the Potomac from Fortress Monroe almost to the national capital. From Washington the Confederate lines of defense lay w. to Harper's Ferry; thence through the mountains of w. Va. and s. Ky., crossing the Mississippi below Cairo; thence through s. Mo. and the e. border of Kan.; thence s.w. through Indian Terr. and along the n. boundary of Tex. to the Rio Grande. The length of this line, with the southern Atlantic and Gulf coasts, is about 11,000 m. Congress, July 13, authorized Pres. Lincoln to shut up the ports of the seceded states; congress also empowered the pres. to call out 500,000 vols. for 3 years' service. The first battle occurred at Bull Run (or Manassas) July 21; the Union army of raw undisciplined militia was routed. At Wilson's Creek, Mo., there was another collision, Aug. 10; here neither side gained advantage. Ft. Hatteras, N. C., was captured by U. S. forces Aug. 29, and Port Royal, S. C., Nov. 7: thus were two important harbors of refuge won for the blockading fleets. In the mean time Gen. George B. McClellan had defeated the Confederates in several minor engagements in w. Va.; after the repulse at Bull Run he succeeded the aged Gen. Winfield Scott as gen.-in-chief. His first task was to organize the army around Washington. The work of disciplining and fashioning into an effective army the raw levies collected for defense of the national capital and for operations against Richmond, consumed many months; and not till the spring of 1863 was the Army of the Potomac in readiness for a forward movement.

In the mean time, by authority of congress (1862, Feb. 25), the U. S. treasury issued its notes, which by law were legal tender for payment of all debts, and for all purposes except payment of customs duties and of interest on the national debt. Slavery was prohibited in the Dist. of Columbia; and the army was forbidden to restore runaway slaves to their owners.—The Union Pacific Railroad Co. was incorporated the same year, and the govt. lent to the company its credit ($16,000 a mile) to aid in the speedy completion of the road: the company also received alternate sections of the public lands through which its line lay.—Specie payment was suspended 1861, Dec.; the price of gold began to rise rapidly 1862, May: it was 1·70 on the dollar in 1863, and 2·85 in 1864. While prices and rents rose 90 per cent., wages rose only 60 per cent. 1861–66. The Morrill Tariff Act increased the tariff rate on dutiable articles from 18 per cent. (as before 1861) to 50 per cent.

The internal-revenue taxes amounted (1866) to $310,000,000. In the Confederacy the depreciation of the paper currency was far greater than in the loyal states. Prices of various articles were as follows in Richmond 1864, May: pair of boots $200; coat $350; trousers $100; shoes $125; flour, barrel, $275; corn-meal, bushel, $70; bacon, lb., $9; fowls, pair, $30; shad $20; potatoes, bushel, $25; white beans, quart, $4; butter, lb., $15; fire-wood, cord, $50. No beef could be bought.

At the beginning of 1862 the w. part of Va. had separated itself from the parent state. In the w., Gen. Ulysses S. Grant, commanding a part of Buell's army, moved up the Tennessee river, and with a brilliant attack captured Ft. Henry and Ft. Donelson, thus effecting the first great Union success, and breaking the centre of the Confederate line (Feb.). This opened the way for occupation of almost all w. Tenn., including Nashville, the capital. The theatre of war was now 200 m. within the Confederate border. The first great battle of the war was that of Pittsburgh Landing (Apr. 6, 7), where Grant and Sherman sustained the onset of a Confederate army commanded by Gen. Albert S. Johnston. The Union forces held their ground stubbornly till Buell, with the main army, changed the situation, and the Confederates were driven back to Corinth. The southern cause suffered a grievous loss in this action—their great and beloved commander Johnston falling mortally wounded. The Union armies pushed on to Corinth; the Mississippi down to Memphis was freed from the enemy. Thus the Confederate line was set back through Tenn. fully 200 m., and the advantages gained by the national armies here, as in w. Va., were thereafter held. A naval expedition under Farragut and Porter, 1862, Apr. 24, had brilliant success in an engagement with the Confederate fleet and shore-batteries, and, in co-operation with a land-force commanded by Gen. Butler, captured and occupied New Orleans Apr. 25. The fleet then ascended the Mississippi, and cleared the river of Confederate vessels and Confederate works as far as Vicksburg. While the Union cause was thus advancing with great strides in the s. and s.w., the Army of the Potomac was preparing for a movement on Richmond. 1862, Mar. 8, occurred the action between the new U. S. *Monitor* and the *Virginia* (old U. S. *Merrimac*) in Hampton Roads (q.v.)—an engagement which, though itself indecisive, resulted in compelling the Confederate iron-clad to retreat to Norfolk, quieting the alarm of northern cities on the Atlantic coast, and revolutionizing the art and science of naval war. Before the end of another year, the U. S. possessed 75 iron-clad vessels—many hastily prepared for service on the great rivers.

The Confederate army before Richmond occupied strong defensive positions with regard to an attack from the direction of Washington. McClellan therefore wished to take his army to Fortress Monroe, and thence to advance on the Confederate capital, judging that the Confederate armies must follow him; but the pres. and his advisers believed that this course would leave the capital at the mercy of the enemy, who by a coup might capture Washington. A portion of the army was therefore detached from McClellan's command, put under command of Gen. McDowell, and ordered to take the overland route as far as Fredericksburg, while McClellan moved up the peninsula toward Richmond: as the enemy withdrew from their positions facing Washington to confront McClellan, McDowell was to join the latter. But the main army spent a month (Apr. 5—May 2) quietly before Yorktown; and when McDowell's army was about to join the main force, he met an obstacle in the freshet-swollen Chickahominy. In this situation he was attacked by Gen. Joseph E. Johnston, and beaten at Seven Oaks and at Fair Oaks, in which battles Gen. Robert E. Lee first appeared as commander of a large army. Gen. Thomas J. ('Stonewall') Jackson moved against the Union forces in the Shenandoah valley, drove them to the Potomac, and so filled Washington with alarm that McDowell's army was withdrawn hastily from Fredericksburg for defense of the capital: then Jackson joined Lee, who attacked McClellan at Gaines's Mill 1862, June 27, cutting off the Union army from its base of supplies on the York river. McClellan was forced to move his right wing s. in order to establish a new base on the James river. In this retreat he was hotly pressed by Lee and Jackson, and McClellan reached his objective point only after the 'seven-days' battles'—the most desperate engagements of the war to that date. Gen. John Pope, having succeeded McDowell in command of the army covering Washington, was attacked and beaten by Jackson at Bull Run Aug. 29; McClellan was recalled to defend the capital. On McClellan's retirement from the peninsula, Lee joined Jackson, and the combined army, passing to the n.w. of Washington, passed through the Blue Ridge Mts. into n.w. Md. At Antietam (or Sharpsburg) the Confederate army was overtaken by the Union Army of the Potomac, which had been brought up through Md., and the battle of Antietam was fought 1862, Sep. 17. Both sides claimed victory, but Lee was compelled to retreat to his former position. McClellan—being judged not to have followed up his advantage—was removed from command, and suceeded by Gen. Ambrose E. Burnside. The latter, in an attempt to storm the heights behind Petersburg, suffered a disastrous repulse Dec. 13; he was displaced, and Gen. Joseph Hooker succeeded him.

Soon after the battle of Antietam, Pres. Lincoln issued a proclamation summoning the states in rebellion to return to their allegiance before 1863, Jan. 1, under penalty of having all slaves within their borders declared free men. No state complied with the demand, and Jan. 1 the slaves were declared free: for his proclamation, see SLAVERY. The Confederate agents in Europe purchased in England (1862) the fast steamers *Alabama* and *Florida*, and, having put armaments on board, sent them to sea to prey on American commerce. Soon the flag of the U. S. disappeared from the ocean, most of the ocean-going shipping being transferred under the flags of other nations. Another Confederate cruiser, the *Georgia*, was afloat 1863. These three cruisers were destroyed in naval conflicts 1864.

While Lee was invading Md., Gen. Braxton Bragg, commanding the Confederate armies in Miss., having turned the Union line in s. Tenn., passed into Ky., and on retiring into Tenn. bore away much booty. Gen. William S. Rosecrans toward the end of 1862 moved forward from Nashville to attack Bragg, and there was an obstinate struggle, with indecisive result, at Murfreesboro Dec. 31 and 1863, Jan. 1, 2. The western U. S. armies were now four: that of Rosecrans at Murfreesboro, that of Grant at Corinth, that of Schofield in Mo. and Ark., and that of Banks in La. It was of vital importance to open the Mississippi completely, and the possession of Vicksburg by the Confederates was the remaining obstruction to be removed. The task of conquering this strong position was assigned to Grant. He sought first to take the place from the w. bank of the river. That attempt failing, he crossed the Mississippi s. of Vicksburg, transferring his army in the boats of the river fleet. Here Grant's army had on one side of him, at Jackson, Miss., Gen. Joseph E. Johnston with an inferior force of Confederates: on the other side was Vicksburg, a fortified place occupied by the bulk of the choicest Confederate troops in the w. under Gen. Pemberton. The two Confederate gens. were at variance: Pemberton did not wish to owe his expected victory over Grant to Johnston. Grant fell on Johnston's army, scattered it, and made its junction with Pemberton impossible; then advancing toward Vicksburg, fighting several sharp battles as he went, he had Pemberton shut up in Vicksburg before the end of May. Pemberton, after a six weeks' siege and continual assaults, surrendered to Grant 1863, July 4 (30,000 prisoners of war, 200 cannon, and 70,000 stand of arms). Port Hudson having surrendered to Gen. Banks July 9, the Mississippi was in the power of the Union armies through its entire length, and the Confederacy was cleft in twain. West of the great river no regular military operations were carried on thereafter, except those which resulted in the defeat of Banks in n.w. La. 1864. The fighting capacity of the Confederacy was seriously reduced by the loss at Vicksburg, whose surrender was only one day after the great Union victory at Gettysburg. While Grant was occupied at Vicksburg, Rosecrans was moving from the e. end of the Union line in Tenn. against Bragg at Chattanooga. Bragg was compelled to retire into Ga., whither Rosecrans pursued him; but with disastrous result, for the pursuing army was defeated at Chickamauga creek 1863, Sep. 19-20. At Chattanooga, whither the Union army retreated, Bragg, having occupied all the mountains around, was confident of his ability to compel a surrender of the entire Union force. A part of Bragg's army was even detached under Longstreet to besiege Knoxville. Grant was now ordered to the command at Chattanooga: with him were Gen. William T. Sherman and other officers who had taken part in the operations at Vicksburg. Grant quickly reopened communication with the rear; brought in supplies and reinforcements; and gave the order to dislodge the enemy from his commanding positions on the mountains. Lookout Mountain and Missionary Ridge were brilliantly taken by assault (Nov. 23–25). Bragg was removed, giving place to Gen. Joseph E. Johnston; and Longstreet withdrew from the siege of Knoxville, retreating across the mountains into Va.

In the e., the Army of the Potomac, under Hooker, lay at Fredericksburg till 1863, May. Attempting to cross the Rapidan on the way to Richmond, Hooker suffered defeat in the battle of Chancellorsville May 2–3. The Confederate army lost in that action Gen. 'Stonewall' Jackson. In June, Lee was preparing for another invasion of the north, and toward the end of the month his army began to advance northward along nearly the route followed 1862: the Union Army of the Potomac, now commanded by Gen. George G. Meade, held a nearly parallel course through Md. into s. Penn. The Confederate advance penetrated Penn. almost to Harrisburg; but the two main opposing armies met at Gettysburg. The Confederate army was defeated (1863, July 1–3) after a terrific struggle, with great loss; in this battle it lost much of its *prestige*, and was never again what it had been. Then for a time the opposing hosts confronted each other across the Rappahannock, having come back once more to nearly the same relative positions which they occupied at the beginning of the war; but greatly changed was the relative situation of the two contestants both in war resources and in financial ability. The blockade of the Confederacy's ports was almost perfect; the railroads of the north, and of the south as well (for all the great southern lines, except those of Ga., were now held by the Union armies), were at the service of the national govt. for rapid transportation of troops; similarly with the telegraph lines: and among the many important developments of the art of war introduced during this war, not the least was the systematic use of these two agencies. Two army corps comprising 23,000 men, with the needful *matériel*, were transferred from Washington to Chattanooga, 1,200 m., in 7 days (1863); and such transfers were not rare. Conscription was resorted to by the Confederacy to fill its ranks; the Federal govt. enacted a conscription law first 1863. The enforcement of the law provoked bloody and frightful riots in New York in July, on the part of the lower classes of southern sympathizers in that city; but opposition was put down promptly, and the law was executed throughout the country: the several states, however, were left free to fill the draft by means of volunteers stimulated by offer of large bounties; drafted men also were allowed to hire and present substitutes.

Ulysses S. Grant was appointed lieut.gen. early in 1864, and intrusted with command of all the U. S. armies. Leaving Sherman at Dalton, Ga., to confront Gen. Johnston, Grant repaired to Washington to meet Lee. Crossing the Rapidan, he entered the Wilderness early in May with an army variously estimated, but much larger than that of Lee; simultaneously 30,000 men were dispatched up the James river under Gen. Butler, to co-operate. After 2 weeks of hard fighting (May 5–18) and 4 days at North Anna (23–27), the further advance of the Army of the Potomac on Richmond was stoutly contested at Cold Harbor, near the Confederate capital. An attack in force was repulsed with serious loss to the Union arms; and Grant, recognizing the impregnability of Lee's position there, sought a weak spot elsewhere in Lee's lines on that side of Richmond, but found none. Crossing the James and reaching Petersburg, where he was within striking distance of the southward railroad lines on which Lee depended for his supplies, Grant found opposed to him there a strong Confederate army, which stayed his advance to the railroads. To weaken the Union army before him by creating a necessity for detaching a part of it for the defense of Washington, Lee now sent Early with a force up the Shenandoah valley to threaten the national capital (July). But Grant did not wait for the appeal from Washington: he detached a command under Gen. Philip H. Sheridan to meet Early, whose army was crushed by Sheridan at Cedar Creek (Oct.).

The army commanded by Sherman in n.w. Georgia advanced against Gen. Johnston 1864, May 5, the same day in which Grant crossed the Rapidan. Johnston retired slowly before Sherman till he reached Atlanta in the middle of July; and Johnston was superseded in the command July 17 by Gen. Hood, who was expected to assume an aggressive attitude. Hood made three furious attacks on Sherman, in each suffering defeat. At length, his lines of communication being cut, he had to retreat, and Sherman's army entered Atlanta Sep. 2. Hood then countermarched, and headed his force for Tenn., hoping that Sherman would start in pursuit of him. But Sherman sent Gen. Thomas back to Nashville to confront Hood—taking command of the forces there and of reinforcements ordered from the west. Hood's army was routed by Gen. Thomas (Dec.). Gen. Sherman had after the taking of Atlanta 60,000 veteran troops; and, far as he was in the interior of the Confederacy, no organized Confederate force stood between his rear and Lee's army, for Hood's army never rallied after its defeat at the hands of Gen. Thomas. After the capture (Aug. 5) of Mobile by Farragut, only one Confederate seaport, Wilmington, N. C., remained to the enemy. 1864, Nov. 16, Sherman sent his wounded north, and began the 'march through Georgia to the sea.' He destroyed the railroad and telegraph line by which he had kept communication with the north, and, marching eastward, reached Savannah Dec. 12. Savannah was taken Dec. 20. He moved n. from Savannah 1865, Jan. 15; and reaching Fayetteville, N. C., he there rested, holding in check the force assembled under Gen. Johnston, and thus preventing it from joining Lee.

In the beginning of Mar. (1865), Sheridan, with a cavalry force, moved from the valley of the Shenandoah, and joined Grant before Petersburg. Grant was working his lines steadily around Petersburg on the s., so compelling Lee to defend a longer line with a reduced force. Grant put Sheridan in command of the Union left; and Sheridan, advancing to Five Forks, destroyed the Southside railroad, another of Lee's lines of supply. This movement made necessary a further extension of Lee's defense-line. When the line had been duly extended, and consequently weakened at every point, a general advance of Grant's army was made. Petersburg was taken; Richmond was occupied by the victors; Pres. Jefferson Davis and the whole *personnel* of the Confederate govt. fled to N. C.; Lee was surrounded and compelled to surrender unconditionally Apr. 9. No prisoners were held by Grant, officers and men alike being permitted to go their ways on parole, and even to take their horses with them—Gen. Grant remarking that they 'would need them for their spring plowing.' He gave them assurance that they should not be disturbed by the U. S. govt. so long as they were true to their parole and obeyed the laws. The surrender of Johnston to Sherman followed Apr. 26. The war was ended.

[Throughout this historical sketch, see for further details the respective titles of principal persons, places, battles, etc., mentioned herein.]

The war was scarcely ended when 800,000 men of the national armies were paid off. During the war the number of men called for by the U. S. govt. was 2,759,049; the number actually furnished was 2,653,062. Of colored troops there were 186,097. The state of N. Y., with pop. less than 4,000,000, sent 223,836 men into the field. There was an annual waste of one-third, half of which was by wounds in battle. The Federal losses during the war were estimated at 316,000. In the Union armies there were a little more than 1,000,000 men 1865, Mar. In 1864 the Confederate army consisted of 20,000 artillery, 128,000 cavalry, 400,951 infantry; the entire available force enrolled did not exceed 700,000. The Confederate losses are said to have amounted to 300,000. The U. S. debt, incurred on account of the war, reached the maximum, $2,845,907,626.56, 1865, Aug. 31; besides this, about $800,000 of revenue had been expended. States, counties, towns, etc., also expended large sums and incurred heavy obligations for war purposes. The value of property destroyed in the south (apart from the value of the liberated slaves, $2,000,000,000) cannot be estimated; probably the total loss and expenditure was not less than $8,000,000,000. To this add the expenditure on account of pensions (see PENSIONS AND PENSIONERS).

1865, Mar. 4, Abraham Lincoln entered on his second term of the presidency; the vice-pres. was Andrew Johnson, of Tenn. On Apr. 14, while the north was rejoicing over the capture of Richmond and the surrender of the Confederate armies, the pres. was assassinated at a theatre in Washington, by John Wilkes Booth, an actor; while an accomplice attacked and nearly killed William H. Seward, sec. of state. The assassin was pursued and killed, and several of his accomplices were tried and hanged. Andrew Johnson became pres. Jefferson Davis and the members of the Confederate govt. were supposed to be privy to the assassination of President Lincoln, and large rewards were offered for their apprehension. Davis was captured in Ga., and placed in Fortress Monroe, but was released without trial 1867, May. An amendment to the constitution forever abolishing slavery in the states and territories of the Union was declared ratified by two-thirds of the states 1865, Dec. 18. The vast change in the organization of the republic made by this new fundamental law was completed by the 14th and 15th amendments, passed 1868 and 1870, which gave to the former slaves all the rights and privileges of citizenship. But the reconstruction of the Union presented a difficult constitutional and practical problem. Before Pres. Lincoln's death state govts. had been organized by the executive of the U. S. in Va., Tenn., La., and Ark., and amnesty was assured to all citizens of the Confederacy who would take oath to support the Federal govt. and the abolition of slavery; state govts. set up by the acts of such voters were recognized as lawful and regular. But the situation was materially altered after the assassination of Abraham Lincoln. Then congress, never content with the terms of settlement proposed by Lincoln, favored different plans of reconstruction, all of them exacting from the states that had revolted conditions far more stringent than those required by Pres. Lincoln. The 7th article of Gen. Sherman's 'memorandum' to Gen. Joseph E. Johnston was ignored as being plainly *ultra vires:* in that art. Gen. Sherman, who represented himself as being 'fully empowered to arrange terms for the suspension of hostilities,' promised to the officers and men of Johnston's army and to all the Confederates then in arms 'a general amnesty,' on condition of disbandment of the Confederate army. Pres. Andrew Johnson, during the months intervening between his succession to the presidency, 1865, Apr., and the assembling of congress in Nov., reorganized the govts. of all the states of the late Confederacy, the condition precedent being their acceptance of the 13th amendment of the U. S. constitution. But congress refused to receive them back on such terms, yet made one exception in favor of the state govt. of Tenn.: that state was admitted to all the rights of statehood 1866. The legislatures of the states recognized by the pres. at once began to enact contract and vagrancy laws, under which the freedmen would be kept in a state little different from slavery. The pres. and congress were soon in irreconcilable conflict. The pres. vetoed acts passed by congress, such as the Freedmen's Bureau Act, the act admitting Nebraska to the Union (1867), the Tenure of Office Law (whose sole purpose was to tie the hands of the then chief executive), and the Reconstruction acts; but congress in every case overrode the presidential veto. By the Reconstruction acts the states of the fallen Confederacy (Tenn. excepted) were made military dists., the commanding gen. of each of which was empowered to deny to the state govt. the exercise of any powers which might be used to the prejudice of the freedmen. The state govts. themselves were to be merely provisional, until legislatures and executive officers chosen by their whole citizenship—without regard to race, but with exclusion from suffrage of certain leaders in the secession movement—should recognize the principle of manhood-suffrage and ratify the 14th amendment to the constitution: see CONSTITUTION OF THE UNITED STATES. In nearly all of the once rebel states these conditions were complied with, and govts. set up mostly by the votes of the freedmen. The struggle between pres. and congress reached its height 1868, when, for having violated the Tenure of Office Law by removing Edwin M. Stanton from the war secretaryship, Andrew Johnson was brought to trial before the senate. The necessary two-thirds vote for conviction could not be obtained, and Johnson completed his term amid unceasing strife. The presidential election of 1868 was triumphantly won by the republicans, and Johnson was succeeded by Gen. Ulysses S. Grant 1869, Mar. 4. The states once forming the Confederacy had all, except Va., Miss., and Tex., been admitted to the full rights of statehood 1868, June, and they voted in that election. The legislatures of those states were filled mostly with freedmen, and the chief executive offices by freedmen or by 'carpet-baggers'—i.e., white republicans from the north. The 15th amendment, having been ratified by a sufficient number of states, went into effect 1870. The three states which had rejected the earlier terms of readmission to the Union were now required not only to comply with these terms, but, further, to ratify this amendment. Not until 1871, Jan., were all the states represented in congress.

In 1867 the U. S. acquired by purchase the whole of Russian America (see ALASKA). In 1872 the Alabama (see ALABAMA, THE) Arbitration gave its decree in favor of the U. S.; and the San Juan boundary dispute with Great Britain was settled on the same side by the emperor of Germany. The outrages of a secret organization known as the Ku-Klux Klan, in the southern states, necessitated the passing of an act, 1871, giving cognizance of such offenses to the U. S. courts.

The year 1876, memorable in the annals of the republic as the hundredth anniversary of the Declaration of Independence, was celebrated by a great Centennial Exhibition at Philadelphia. The presidential election of the same year was of more than usual interest. Gen. Ulysses S. Grant (q.v.), chosen pres. 1869, had been re-elected 1873. When the result of the keenly contested election toward the close of 1876 began to be made known, it seemed at first favorable to the election of Samuel J. Tilden, the democratic candidate. But many of the returns from some southern states were disputed, and for months there was intense excitement. At last a special tribunal, selected from the senate, the house of representatives, and the judges of the supreme court, was appointed to examine the election returns: the result was that Rutherford B. Hayes, the republican candidate, was declared to have been elected pres., and inaugurated 1877, Mar. 4.—A period of great commercial depression, not confined to the U. S., reached a height in 1877, and was accompanied by alarming difficulties between labor and capital. A measure was passed 1878, in spite of the president's veto, making silver a legal tender equally with gold, though silver was then 11 per cent. less in value. A marvellous recovery in trade rendered comparatively easy, 1879, the resumption of specie payments. Antipathy to the Chinese immigrants in the Pacific states raised, about this time, a violent agitation. The wheat crop and exportation 1882 and 84 were unprecedentedly large; subsequent years showed decrease. In 1879 there was, for the first time since the civil war, a democratic majority in both houses of congress; but the presidential elections in 1880 gave a large majority for the republican candidate, Gen. Garfield, though the 'Solid South' voted for Gen. Hancock, the democratic candidate. Garfield (q.v.), installed 1881, Mar. 4, died in Sep. of that year from the effects of an assassin's shot. Thereupon the vice-pres., Gen. Arthur, succeeded to the presidency. The continued development of the U. S., as shown in the returns of the census 1880, led to an almost embarrassing surplus of revenue, and was held by many to call for a revision of the tariff. There was, however, stagnation in several departments of industry 1882–85. At the election of 1884 the candidates were James G. Blaine, republican, and Grover Cleveland, democrat. Cleveland (1885–89) was the first democratic pres. elected since Buchanan: he owed his election to a strong defection of republicans from their party, through hostility to James G. Blaine. Toward the close of his administration, Cleveland, in a message to congress, strongly advocated the policy of reducing the tariff rates. On an appeal to the people for re-election on this issue he was defeated by his republican competitor, Gen. Benjamin Harrison (grandson of the first Pres. Harrison), who received the suffrages of 233 presidential electors, Cleveland receiving only 168; though the votes returned for the democratic (Cleveland) electors exceeded those for the republican (Harrison) electors by 98,017, the total democratic vote being 5,538,233, and the total republican vote 5,440,216. Pres. Harrison's administration was supported by republican majorities in senate and house of representatives. The most memorable event of U. S. history in Harrison's term of office was the passing of the McKinley Tariff Act: under this law a degree of commercial reciprocity was arranged between the U. S. and several other countries. The wheat harvest 1891 was of unprecedented amount. Unfortunate disputes with Italy and with Chili—that with Chili seeming at one time likely to eventuate in war—were happily settled.

In the presidential campaign of 1892 the repub. candidates for pres. and vice-pres. were Benjamin Harrison and

Whitelaw Reid; the dem., Grover Cleveland and Adlai E. Stevenson; the pop., James B. Weaver and James G. Field; the pro., John Bidwell and James B. Cranfill; and the social labor, Simon Wing and Charles H. Matchett. The election resulted in the choice of the dem. candidates, who received 5,554,685 popular votes, a plurality of 382,352, and 277 electoral votes. The 53d congress (1893–5) opened with 44 democrats, 38 republicans, and 3 populists in the senate, with 3 seats in doubt; and with 220 democrats, 126 republicans, and 8 populists in the house, with two members to be elected in R. I. The second administration of Pres. Cleveland had several notable features. At its beginning the pres. withdrew from the senate the draft of a projected treaty with Hawaii, providing for the annexation of the islands to the U. S.; sent a special commissioner to investigate the facts concerning the revolution in Honolulu, the dethronement of the queen, and the establishment of a provisional govt.; and vainly endeavored to have congress right what he pronounced a wrong done the monarchy in the name of the U. S. The opposition to the pres. developed in this case, not only by his political opponents, but by a strong faction in his own party, continued to the close of the term, and was at no point more effective than in thwarting the various attempts of the administration to carry out financial legislation. A new tariff bill, bearing the name of Chairman Wilson of the house committee on ways and means, was introduced 1893, Dec. 19; passed in greatly amended form by the senate in 1894, Aug. 13; and became a law without the approval of the pres. In 1895, Apr., the U. S. supreme court declared two of the income-tax provisions unconstitutional, and upheld the remainder, and May 20 following, on a rehearing, declared the whole measure unconstitutional. A new treaty with China was concluded 1894, Mar. 17, and a commercial and reciprocal treaty with Japan, Nov. 22 following. Amnesty and pardon were proclaimed to all persons convicted of polygamy, 1894, Sep. 27. The pres., as arbitrator, decided the boundary dispute between Brazil and the Argentine Republic in favor of the former 1895, Feb. 6. The services rendered by the U. S. representatives in China and Japan during the war between those countries, were acknowledged by the respective emperors in autograph letters to the government. In 1895, Dec., the pres. called the attention of congress to the boundary dispute between Great Britain and Venezuela; and later laid before that body the correspondence between the U. S. and British govts. on the subject, and recommended the appointment of a commission to determine the divisional line in dispute. The message created large excitement throughout Europe and America; congress granted the authority; and the pres. appointed the commission 1896, Jan. 1. This action precipitated fears of serious international trouble, and both houses of congress adopted liberal initial measures for the defense of the country. The elections to the 54th congress (1895–97), resulted in the political composition of the houses as follows: senate, 45 repub., 39 dem., 6 pop.—total, 90; house, 249 repub., 103 dem., 6 pop., 1 silver, 1 vacancy—total 360. In 1894, Jan., Sec. Carlisle, of the treas. dept., issued a call for the purchase of $50,000,000 of 5 per cent. bonds, for the purpose of retaining the gold reserve, and received $58,660,917 in gold. In Nov. following, a second call for $50,000,000 brought subscriptions aggregating $178,341,150, and the amount accepted at 117·077 was $58,538,500. Extraordinary withdrawals of gold led the pres., 1895, Jan 28, to ask authority of congress for the sec. of the treas. to issue bonds at a low rate of interest to maintain the reserve and redeem notes issued for the purchase of silver; but congress refused to grant the authority. The sec. then signed a contract with a syndicate to supply the govt. with 3,500,000 oz. of standard gold coin at the rate of $17.80 per oz., for 30-year 4 per cent. bonds, on the condition that one-half of the coin should be obtained and shipped from Europe. Pending the execution of the contract, the pres. again asked congress for authority to issue 3 per cent. gold bonds, pointing out that more than $16,000,000 would be saved in interest by such bonds; but congress again withheld its sanction. The contract was executed, and bonds aggregating $62,315,000 were sold for a little more than $65,000,000 in gold. Again, 1896, Jan. 5, the sec. was obliged to ask proposals for $100,000.000 of 30-year 4 per cent. bonds, and the responses covered $568,269,850, at prices ranging from par to more than 120. On the allotment, individual bankers and bidders were given $62,088,650, and a syndicate $37,911,350. For the presidential campaign of 1896, the repub. party adopted a sound-money, or gold, platform, and nominated William McKinley, of O., for pres., and Garret A. Hobart, of N. J., for vice-pres.; the dem. party pronounced for the unlimited coinage of silver at 16 to 1, and the reorganization of the U. S. supreme court, and nominated William J. Bryan, of Neb., for pres., and Arthur Sewall, of Me., forvice-pres.; the pop. party endorsed the dem. platform and candidate for pres., and nominated Thomas E. Watson of Ga., for vice-pres.; the pro. party nominated Joshua Levering, of Md., for pres., and Hale Johnson of Ill., for vice-pres.; the social labor party nominated Charles H. Matchett, of N. Y., for pres., and Mathew Maguire, of N. J., for vice-pres.; and the national silver party endorsed the dem. nominations. The action of both the repub. and dem. national conventions on the money question caused much dissatisfaction in each party. The few silver delegates to the repub. convention withdrew in a body after the nominations; and the sound-money dem. leaders held a convention and, Sep. 3, nominated John M. Palmer, of Ill., for pres., and Simon B. Buckner, of Ky., for vice-pres. McKinley was elected, receiving 271 electoral and 7,102,447 popular votes, and a plurality of 597,486, the largest since Grant's election in 1872, and the only pres. since Grant elected by a *majority* of the popular vote. See PRESIDENT AND VICE PRESIDENT, ELECTIONS OF.

The year 1898 was but a few months old when the United States found itself at war with Spain. Brought about by hostile demonstrations against Americans in Havana, the publication of a letter written by Señor de Lome, Spanish minister at Washington, which contained insulting allusions to President McKinley, and the destruction of the U. S. battleship *Maine*, while on a friendly visit in the harbor of Havana, and the loss of 266 American lives, members of her crew—all these events led to the Spanish-American war, which was begun by Spain, 1898, April 21, when she returned the American minister at Madrid, Gen. Woodford, his passports.

Another cause, and this led to the decision of Congress to intervene in Cuban affairs and to grant the insurgents belligerent rights, was Spain's inability to subdue the rebellion and her declining to recognize the independence of the island. When Captain-General Weyler resigned 1897,.Oct. 6, and General Blanco succeeded him, an attempt was made to give Cuba a shadowy form of autonomous government and amnesty was proclaimed. But the insurgents paid no heed to Spanish offers, which were deemed insincere, and fighting continued. The awful results of General Weyler's orders to lay the plantations bare, burn the dwellings of the people, and drive them into military zones, where they died from starvation and disease, horrified the American people, and Congress was urged to interfere for the sake of humanity.

Owing to the anti-American demonstrations by Spanish volunteers at Havana between Jan. 15 and 20 the governor-general found it necessary to place a military guard around the U. S. consulate. This caused intense excitement in the U. S. and the battleship *Maine* was dispatched to Havana harbor Jan. 24 ostensibly on a friendly visit, but really to afford protection to American citizens in case of necessity.

Following this came the publication of De Lome's letter (Feb. 9) maligning President McKinley, which resulted in his resignation and recall, and the blowing up of the *Maine* (Feb. 15) in Havana harbor. On receipt of the news public feeling throughout the U. S. was thoroughly aroused. Congress immediately voted $200,000 for the employment of divers to investigate the cause of the destruction of the vessel and to raise her if found practicable. A court of inquiry to find out the cause of the disaster was appointed Feb. 18, and began its investigations at Havana three days later. Foreseeing the result of the investigation and the strained relations likely to arise between the U. S. and Spain, Consul-General Lee advised all Americans not necessarily detained in Cuba to leave for home at once. This action, together with the jealous care with which he protected American citizens and interests, and his intense patriotism, led to a Spanish demand for his recall, which was made March 5 and promptly refused.

Strong evidence having been obtained by the court of inquiry that the *Maine* was blown up by a submarine mine a wave of indignation at what was believed to be an act of treachery swept over the U. S. The court held session in Havana for four weeks, and reached an unanimous decision

March 21 that the loss of the *Maine* was not in any respect due to fault or negligence on the part of any of the officers or members of her crew; that the ship was destroyed by the explosion of a submarine mine, which caused the partial explosion of two or more of her forward magazines; and that no evidence has been obtainable fixing the responsibility for the destruction of the *Maine* upon any person or persons."

By this time public opinion was fully aroused. Congress had previously adopted unanimously a resolution establishing a defense fund of $50,000,000, and on March 29 resolutions declaring war on Spain and recognizing the independence of Cuba were introduced into both houses, and the House of Representatives passed a resolution favoring U. S. intervention into Cuban affairs April 13. In the meantime Consul-General Lee, who had recalled all the American consuls on the island, left Havana with a large number of American residents. In Spain mobs made hostile demonstrations before the American consulates at Barcelona, and Malaga, breaking the windows of the buildings and smashing the furniture. These riots continued till the eve of the withdrawal of the American minister April 21, when actual hostilities began. On the following day the North Atlantic squadron sailed from Key West under Admiral Sampson to blockade all Cuban ports. On its way the gunboat *Nashville* captured the first prize of the war, a Spanish vessel, the *Buena Ventura*.

A call for 125,000 volunteers was issued by President McKinley April 23 and a proclamation announcing the war was made to the neutral powers. Coal was declared contraband of war by Great Britain April 21, and this was followed on the 24th by her declaration of neutrality. The other European nations, with the exception of Germany, also declared themselves neutral.

About this time Commodore Dewey (q.v.), who had received instructions from Washington to capture or destroy the Spanish Pacific fleet, set sail from Hong Kong, and arriving off Manila Bay April 30 forced his way past the batteries of Corregidor island and on May 1 sank the Spanish fleet off Cavité, a suburb of Manila (q.v.), silencing the forts and capturing the arsenal. For this daring deed Dewey (q.v.) was made a rear-admiral ten days later. Two months later another Spanish fleet under the command of Admiral Cervera, which arrived at Santiago de Cuba (q.v.) May 19, was sunk by the North Atlantic squadron under Admiral Sampson, with Commodore Schley second in command,

A second call for volunteers numbering 75,000 men was issued by the President May 25, and on June 10 the war revenue bill was passed by Congress, becoming operative shortly after. On the 14th an army of invasion under General W. Shafter (q.v.), consisting of 16,000 men, sailed from Key West for Santiago, and arrived at Daiquiri, Cuba. June 20. Active military operations were begun, and after several brilliant engagements (see ROUGH RIDERS; SANTIAGO) in which the Spaniards under Gen. Pando were defeated, the surrender of Santiago was demanded and made July 17. On the 20th Gen. Leonard Wood was appointed military governor of the city.

The last naval engagement on the Cuban coast occurred July 21, when four U. S. warships entered the harbor of Nipe and captured the port after a furious bombardment.

Another military expedition was organized by the commanding general of the U. S. army, Nelson Miles, and set sail for Porto Rico (q.v.) under his charge. Landing at Guanica on July 25 the army attacked the town, which surrendered quickly, as did also Ponce on the 28th. Plans having been made for a concerted attack of San Juan, orders to advance were impending when news was received of the cessation of hostilities. On July 26 the French minister on behalf of the Spanish government asked for terms of peace, and three days later these were stated by President McKinley.

In the meantime several military expeditions had been prepared and set sail for the Philippines, where the Spaniards were inclined to offer resistance. Commanding one of these Gen. Wesley Merritt landed at Cavité, Manila, July 29 and lost no time in attacking the Spaniards. Jointly with Dewey he advanced on Manila, which surrendered after a short bombardment by the fleet and a brisk land fight which threatened to turn into an assault, on Aug. 13.

Secretary of State Day, Senator Davis of Minnesota, Senator Frye of Maine, Whitelaw Reid of New York, and Senator Gray of Delaware, having been appointed by the President as peace commissioners Sept. 9, set sail for Paris, where the commission were to meet the Spanish appointees Sept. 17, and held their first session Oct. 1.

For thirty days the Spanish peace commissioners contended earnestly for the assumption of the Cuban debt by the U. S. without avail. On the 31st the American commissioners presented the demand of the United States for the Philippines, which was eventually accepted on the payment of $20,000,000.

The terms of the peace protocol were:

"Article 1—Spain will relinquish all claim of sovereignty over and title to Cuba.

"Article 2—Spain will cede to the United States the island of Porto Rico and other islands now under Spanish sovereignty in the West Indies and also an island in the Ladrones to be selected by the United States.

"Article 3—The United States will occupy and hold the city, bay, and harbor of Manila pending the conclusion of a treaty of peace which shall determine the control, disposition, and government of the Philippines."

The fourth article provided for the appointment of joint commissions on the part of the United States and Spain, to meet in Havana and San Juan, respectively, for the purpose of arranging and carrying out the details of the stipulated evacuation of Cuba, Porto Rico, and other Spanish islands in the West Indies.

The fifth article provided for the appointment of not more than five commissioners on each side, to meet at Paris not later than October 1, and to proceed to the negotiation and conclusion of a treaty of peace, subject to ratification according to the respective constitutional forms of the two countries.

The sixth and last article provided that upon the signature of the protocol hostilities between the two countries should be suspended and that notice to that effect should be given as soon as possible by each government to the commanders of its military and naval forces.

Under terms of the protocol the President appointed military commissions to superintend the evacuation of Cuba, Porto Rico, and adjacent islands, as follows:

For Cuba—Maj.-Gen. James F. Wade, Rear Admiral Wm. T. Sampson, and Maj.-Gen. Matthew C. Butler.

For Porto Rico—Maj.-Gen. John C. Brooke, Rear Admiral Winfield S. Schley, and Brig.-Gen. Wm. Gordon.

These soon afterward met the Spanish commissioners at Havana and San Juan, respectively, and by October 18 the joint commission for Porto Rico had completed its work, the Spanish troops had evacuated the island, and at noon that day the U. S. flag was raised. Owing to the difficulty of removing large numbers of troops, the Cuban joint commission did not conclude its task until some weeks afterward.

The essential features of the treaty of peace were as follows:

"1. The customary preface of treaties, in the nature of an expression of amity and of hope for perpetual peace.

"2. The relinquishment by Spain of her sovereignty over Cuba.

"3. The withdrawal of the Spanish troops.

"4. The relinquishment by Spain of her sovereignty over Porto Rico.

"5. Spain's cession of the Philippines.

"6. The withdrawal of the Spanish troops there.

"7. Payment by the United States of $20,000,000 for the Philippines.

"8. The provision for the open commercial policy in the Philippines."

The treaty also provides for the cession of the island of Guam of the Ladrone group to the United States. The treaty was formally concluded and signed at 8:45 P.M. on December 10.

Details as to the evacuation of the Philippines, coaling stations elsewhere, religious freedom in the Carolines, transporting home the prisoners, garrison, and sailors at Manila, and the soldiers and citizens held by the Filipinos, the liberation of all Cuban, Porto Rican, and Philippine political prisoners, the matter of certain free shipping for Spain, the status of patents and copyrights—these were considered subsequently by the joint peace commission and the Congress and Cortes of the respective countries.

Government.—The govt. of the U. S. is based on a federal system deriving vitality from the constitution of

1787–89, which took the place of the 'articles of confederation,' drafted by the continental congress and adopted 1778. Both compacts were drafted and adopted by duly chosen representatives of the whole people; and while reserving large powers to the several states, each conceded to the congress certain comprehensive powers in order to insure greater general protection, a closer union, and a larger mutual and national welfare (see Confederation of the Thirteen American Colonies). The Constitution of the U. S. (q.v.) distinctly specifies the powers which the people of the states were willing to grant to the federal govt., and prohibits both the general govt. and the states from exercising certain powers, the one against the other; thus preserving to the states a large freedom in all matters pertaining to their own govt., and giving to the federal govt. rights to be exercised for defense and advancement of all the states as a single national body (see the Constitution, Art. I. Sec. 8, 9, 10).

Under the constitution the executive authority is vested in a pres., elected for four years; his salary is $50,000 per annum, with family and official residence in the executive mansion, popularly known as the White House. No person excepting a natural-born citizen who has attained the age of 35 years is eligible to the office. A vice-pres. is elected at the same time and for the same term as the pres.; he has a salary of $8,000 per annum, and is pres. of the senate or upper branch of the congress. In case of the removal of the pres. from office, or of his death, resignation, or inability to discharge his official duties, the vice-pres. succeeds to the executive authority; and, by act of congress approved 1886, Jan. 19, in case of the inability of the pres. and the vice-pres. to act, the sec. of state shall act as pres. during the disability; if there be no sec. of state, then the sec. of the treas. shall act; and the remainder of the succession is the sec. of war, atty.gen., postmaster-gen., sec. of the navy, and sec. of the interior, provided in each case that the officer succeeding to the executive authority had been appointed to the cabinet by the advice and consent of the senate, and also was eligible to the presidency under the constitution.

From the adoption of the federal constitution till the time of writing (1897) there were 28 presidential terms and 24 *Presidents*—viz.: (1) George Washington, federalist, 2 terms, 1789–97; (2) John Adams, federalist, 1797–1801; (3) Thomas Jefferson, republican (see Political Parties), 2 terms, 1801–09; (4) James Madison, republican, 2 terms, 1809–17; (5) James Monroe, republican, 2 terms, 1817–25; (6) John Quincy Adams, republican, 1825–29; (7) Andrew Jackson, democrat, 2 terms, 1829–37; (8) Martin Van Buren, democrat, 1837–41; (9) William Henry Harrison, whig, 1841, Mar. 4—Apr. 6; (10) John Tyler, democrat, 1841, Apr. 6—1845; (11) James K. Polk, democrat, 1845–49; (12) Zachary Taylor, whig, 1849, Mar. 5—1850, July 9; (13) Millard Fillmore, whig, 1850, July 9—1853; (14) Franklin Pierce, democrat, 1853–57; (15) James Buchanan, democrat, 1857–61; (16) Abraham Lincoln, republican, twice elected, 1861–65, Apr. 15; (17) Andrew Johnson, republican, 1865, Apr. 16—1869; (18) Ulysses S. Grant, republican, 2 terms, 1869–77; (19) Rutherford B. Hayes, republican, 1877–81; (20) James A. Garfield, republican, 1881, Mar. 4—Sep. 20; (21) Chester A. Arthur, republican, 1881, Sep. 20—85; (22) Grover Cleveland, democrat, 1885–89; (23) Benjamin Harrison, republican, 1889–93; Grover Cleveland, democrat, 1893–97; (24) William McKinley, republican, 1897– . The *Vice-presidents* were: John Adams, 1789–97; Thomas Jefferson, 1797–1801; Aaron Burr, 1801–05; George Clinton, 1805–13; Elbridge Gerry, 1813–17; Daniel D. Tompkins, 1817–25; John C. Calhoun, 1825–33; Martin Van Buren, 1833–37; Richard M. Johnson, 1837–41; John Tyler, 1841–45; George M. Dallas, 1845–49; Millard Fillmore, 1849, Mar. 5—1850, July 9; William R. King, 1853–57; John C. Breckinridge, 1857–61; Hannibal Hamlin, 1861–65; Andrew Johnson, 1865, Mar. 4—Apr. 16; Schuyler Colfax, 1869–73; Henry Wilson, 1873, Mar. 4—1875, Nov. 22; William A. Wheeler, 1877–81; Chester A. Arthur, 1881, Mar. 4—Sep. 20; Thomas A. Hendricks, 1885, Mar. 4—Nov. 25; Levi P. Morton, 1889–93; Adlai E. Stevenson, 1893–97; Garret A. Hobart, 1897– . See POLITICAL PARTIES IN THE UNITED STATES.

The pres. and vice-pres. are elected not by the people direct, but by electors chosen in each state by popular vote, the number of electors being equal to the number of congressmen and senators apportioned to the several states after each census. See PRES. and VICE-PRES., ELECTION OF.

The pres. is assisted in discharge of his duties by a cabinet or council, comprising the secretaries of the departments of state, treasury, war, navy, post-office, interior, justice, and agriculture; and to facilitate official business each of these departments is subdivided into numerous bureaus, whose chiefs report directly to the secretaries, and they in turn to the president. The secretaries hold office during the pleasure of the pres., generally through his term; and receive each $8,000 per annum: see SECRETARIES OF EXECUTIVE DEPARTMENTS.

The legislative authority is vested in a congress consisting of a senate and a house of representatives. Each state is entitled to two senators, who are elected by the state legislatures for terms of six years. A legal candidate for senator must be 30 years old, a citizen of the U. S. for 9 years, and a citizen of the state in which he is a candidate. The number of representatives to which each state is entitled is fixed by congressional apportionment, based on the population enumeration. By the census of 1880, the ratio of representation was fixed at 151,911, and 1883, Mar. 4, the house comprised 325 representatives. The census of 1890 raised the ratio to 173,901, and 1897, Mar. 4, the house comprised 357 representatives, apportioned as follows: Ala. 9; Ark. 6; Cal. 7; Colo. 2; Conn. 4; Del. 1; Fla. 2; Ga. 11; Ida. 1; Ill. 22; Ind. 13; Io. 11; Kan. 8; Ky. 11; La. 6; Me. 4; Md. 6; Mass. 13; Mich. 12; Minn. 7; Miss. 7; Mo. 15; Mont. 1; Neb. 6; Nev. 1; N. H. 2; N. J. 8; N. Y. 34; N. C. 9; N. D. 1; O. 21; Or. 2; Penn. 30; R. I.

2; S. C. 7; S. D. 2; Tenn. 10; Tex. 13; Utah 1; Vt. 2; Va. 10; Wash. 2; W. Va. 4; Wis. 10; and Wyo. 1. Representatives are elected directly by the people, for terms of two years, and senators and representatives receive $5,000 each per annum. A legal candidate for representative must be 25 years old, a citizen of the U. S. for 7 years, and a citizen of the state in which he is a candidate. Vacancies in the senate are filled by appointments by the governors, pending election by the legislatures at their next ensuing session; and vacancies in the house by special elections in the districts in which the vacancies occur. The vice-pres. of the U. S. is pres. pro tem. of the senate; the speaker of the house is a member elected by his fellow-members. The senate has the sole power of confirming or rejecting certain nominations to office by the pres., and of approving or rejecting treaties; and the house has the sole power of originating legislation involving raising and expending money. In cases of impeachment, the house prepares the articles and prosecutes them, and the senate sits as a court, the chief-justice of the U. S. supreme court presiding in the case of the impeachment of the president. Each house of congress makes its own rules, but neither may adjourn for more than three days without the consent of the other.

The judicial authority is vested in a supreme court, consisting (1897) of a chief-justice, salary $10,500 per annum, and eight associate justices, salary of each $10,000 per annum; in 9 circuit courts, salary of judges $6,000 each per annum; in 67 district courts, salary of judges $5,000 each per annum; in 6 territorial courts, with a chief-justice and two to four associate judges each—excepting Alaska and Ind. Terr., which had one judge each—salary of judges $3,000 each per annum; in a court of claims, with one chief-justice and four associate judges, salary of each $4,500 per annum; and in a supreme court of the District of Columbia, with a chief-justice, salary $4,500 per annum, and five associate judges, salary of each $4,000; a court of appeals of the District of Columbia, with a chief justice and two associate justices; and a U. S. court of private land claims, with a chief justice and four associate justices. Judges of U. S. courts who, after serving 10 years and reaching the age of 70 years, resign their office, are entitled to full salary for life.

The District of Columbia is under the direct jurisdiction of the congress: the territories have a special form of govt., with officers appointed by the pres. of the U. S. In general the states are governed after the manner of the general govt., the gov. corresponding to the pres., the legislature in two branches to the congress, and the courts of one to those of the other. For differences and details in the govt. of the states, see their respective titles.

Population.—(1790) white 3,172,006, free colored 59,527, slave 697,681, total 3,929,214; (1800) white 4,306,446, free colored 108,435, slave 893,602, total 5,308,483; (1810) white

5,862,073, free colored 186,446, slave 1,191,362, total 7,239,881; (1820) white 7,862,166, free colored 233,634, slave 1,538,022, total 9,633,822; (1830) white 10,537,378, free colored 319,599, slave 2,009,043, total 12,866,020; (1840) white 14,195,805, free colored 386,293, slave 2,487,355, total 17,069,453; (1850) white 19,553,068, free colored 434,495, slave 3,204,313, total 23,191,876; (1860) white 26,922,537, free colored 488,070, slave 3,953,760, total 31,443,321; (1870) white 33,589,377, colored 4,880,009, total 38,558,371; (1880)—excluding Alaska and Ind. Terr.—white 43,402,970, colored 6,752,813, total 50,155,783; (1890) 62,885,548.

The centres of population as determined by the censuses were: (1790) 39° 16′·5 n. lat., 76° 11′·2 w. long., about 23 m. e. of Baltimore; (1800) 39° 16′·1 n. lat., 76° 56′·5 w. long., 18 m. w. of Baltimore; (1810) 39° 11′·5 n. lat., 77° 37′·2 w. long., 40 m. n.-by-w. of Washington; (1820) 39° 5′·7 n. lat., 78° 33′ w. long., 16 m. n. of Woodstock, Va.; (1830) 38° 57′·9 n. lat., 79° 16′·9 w. long., 19 m. w.s.w. of Moorefield, W. Va.; (1840) 39° 02′ n. lat., 80° 18′ w. long., 16 m. s. of Clarksburg, W. Va.; (1850) 38° 59′ n. lat., 81° 19′ w. long., 23 m. s.e. of Parkersburg, W. Va.; (1860) 39° 04′ n. lat., 82° 48′·8 w. long., 20 m. s. of Chillicothe, O.; (1870) 39° 12′ n. lat., 83° 35′·7 w. long., 48 m. e.-by-n. of Cincinnati, O.; (1880) 39° 4′·1 n. lat., 84° 39′·7 w. long., 8 m. w.-by-s. of Cincinnati; (1890) 39° 11′ 56″ n. lat., 85° 32′ 53″ w. long., 20 m. e. of Columbus, Ind.

The following table shows the distribution of population by states and territories 1880 and 1890:

1880.			1890.			Increase.
State.	Pop.	Rank.	State.	Pop.	Rank.	
N. Y.	5,082,871	1	N. Y.	5,997,853	1	914,982
Penn.	4,282,891	2	Penn.	5,258,014	2	975,123
O.	3,198,062	3	Ill.	3,826,351	3	748,480
Ill.	3,077,871	4	O.	3,672,316	4	474,254
Mo.	2,168,380	5	Mo.	2,679,184	5	510,804
Ind	1,978,301	6	Mass.	2,238,943	6	455,858
Mass.	1,783,085	7	Tex.	2,235,523	7	643,774
Ky.	1,648,690	8	Ind.	2,192,404	8	214,103
Mich.	1,636,937	9	Mich.	2,093,889	9	456 952
Io.	1,624,615	10	Io.	1,911,896	10	287,281
Tex.	1,591,749	11	Ky.	1,858,635	11	209,945
Tenn.	1,542,359	12	Ga.	1,837,353	12	295,173
Ga.	1,542,180	13	Tenn.	1,767,518	13	225,159
Va.	1,512,565	14	Wis.	1,686,880	14	371,383
N. C.	1,399,750	15	Va	1,655,980	15	143,415
Wis.	1,315,497	16	N. C.	1,617,947	16	218,197
Ala.	1,262,505	17	Ala.	1,513,017	17	250,512
Miss.	1,131,597	18	N. J.	1,444,933	18	313,817
N. J.	1,131,116	19	Kan.	1,427,096	19	431,000
Kan.	996,096	20	Minn.	1,301,826	20	521,053
S. C.	995,577	21	Miss.	1,289,600	21	158,003
La.	939,946	22	Cal.	1,208,130	22	343,436
Md.	934,943	23	S. C.	1,151,149	23	155,572
Cal.	864,694	24	Ark.	1,128,179	24	325,654
Ark.	802,525	25	La	1,118,587	25	178,641
Minn.	780,773	26	Neb.	1,058,910	26	606,508

UNITED STATES OF AMERICA.

1880.			1890.			Increase.
State.	Pop.	Rank.	State.	Pop.	Rank.	
Me.	648,986	27	Md.	1,042,390	27	107,447
Conn	622,700	28	W. Va	762,794	28	144,337
W. Va.	618,457	29	Conn.	746,258	29	123,558
Neb.	452,402	30	Me.	661,086	30	12,150
N. H	346,991	31	Colo	412,198	31	217,871
Vt.	332,286	32	Fla.	391,422	32	121,929
R. I	276,531	33	N. H	376,530	33	29,539
Fla	269,493	34	Wash.	349,890	34	274,274
Colo.	194,327	35	R. I	345.506	35	68,975
D. C.	177,624	36	Vt	332,422	36	136
Or.	174,768	37	S. D.	328,808	37	230,540
Del	146,608	38	Or	313,767	38	138,999
Utah.	143,963	39	D. C.	230,392	39	52,768
Dak.	135,177	40	Utah.	207,905	40	63,942
N. Mex	119,565	41	Ind. Terr.	182,984	41	....
Ind. Terr.	78,142	42	N. D	182,719	42	145,810
Wash	75,116	43	Del	168,493	43	21,885
Nev.	62,266	44	N. Mex.	153,593	44	34.028
Ariz.	40,440	45	Mont.	132,159	45	93,000
Mont	39,159	46	Ida.	84,385	46	51,775
Alaska.	33,426	47	Okl.	61.834	47	61,834
Ida	32,610	48	Wyo	60,705	48	39,916
Wyo.	20,789	49	Ariz	59,620	49	19,180
			Nev.	45,761	50	−16,505
			Alaska	21,929	51	−11,497
			Scattered Indians.	58,335		....
	50,267,351			62,885,548		12,618,197

The following table shows the 50 most populous cities 1890, their population 1880, and the increase:

Cities.	Rank.	Population.		Increase.
		1890.	1880.	
New York	1	1,515,301*	1,206,299	309,002
Chicago	2	1,099,850	503,185	596,665
Philadelphia	3	1,046,964	847,170	199,794
Brooklyn	4	806,343*	566,663	239,680
St. Louis	5	451,770	350,518	101,252
Boston	6	448,477	362,839	85,638
Baltimore	7	434,439	332,313	102,126
San Francisco	8	298,997	233,959	65,038
Cincinnati	9	296,908	255,139	41.769
Cleveland	10	261,353	160,146	101,207
Buffalo	11	255,664	155,134	100,530
New Orleans	12	242,039	216,090	25,949
Pittsburgh	13	238,617	156,389	82,228
Washington, D. C	14	230,392	177,624	52,768
Detroit	15	205,876	116,340	89,536
Milwaukee	16	204.468	115,587	88,881
Newark, N. J	17	181.830	136,508	45,322
Minneapolis	18	164,738	46,887	117,851
Jersey City	19	163,003	120,722	42,281
Louisville	20	161,129	123,758	37,371
Omaha	21	140,452	30,518	109,934
Rochester	22	133,896	89,366	44,530

* Disputed.

Cities.	Rank.	Population.		Increase
		1890.	1880.	
St. Paul.	23	133,156	41,473	91,683
Kansas City, Mo	24	132,716†	55,785	76,931
Providence	25	132,146	104,857	27,289
Denver	26	106,713	35,629	71,084
Indianapolis	27	105,436	75,056	30.380
Allegheny	28	105,287	78,682	26,605
Albany	29	94,923	90,758	4,165
Columbus, O	30	88,150	51,647	36,503
Syracuse	31	88,143	51,792	36,351
Worcester, Mass	32	84,655	58,291	26,364
Toledo	33	81,434	50,137	31,297
Richmond, Va	34	81,388	63,600	17,788
New Haven	35	81,298	62,882	18,416
Paterson	36	78,347	51,031	27,316
Lowell	37	77,696	59,475	18,221
Nashville	38	76,168	43,350	32,818
Scranton	39	75,215	45,850	29,365
Fall River	40	74,398	48,961	25,437
Cambridge	41	70,028	52,669	17,359
Atlanta	42	65,533	37,409	28,124
Memphis	43	64,495	33,592	30,903
Wilmington, Del	44	61,431	42,478	18,953
Dayton	45	61,220	38,678	22,542
Troy	46	60,956	56.747	4,209
Grand Rapids	47	60,278	32.016	28,262
Reading	48	58,661	43,278	15,383
Camden, N. J	49	58,313	41,659	16,634
Trenton, N. J	50	57,458	29,910	27,548

† Includes 13,048 now out of city limits.

The increase in the number of cities and in their population 1790–1890 is shown in the following:

Year.	8,000 to 12,000.	12,000 to 20,000.	20,000 to 40,000.	40,000 to 75,000.	75,000 to 125,000.	125,000 to 250,000.	250,000 to 500,000.	500,000 to 1,000,000.	1,000,000 and above.	Total
1790	1	3	1	1	....	....	....	....	....	6
1800	1	....	3	2	....	....	....	....	....	6
1810	4	2	3	....	2	....	...	....	....	11
1820	3	4	2	2	2	....	....	.. .	....	13
1830	12	7	3	1	1	2	....	....	....	26
1840	17	11	10	1	3	1	1	....	....	44
1850	36	20	14	7	3	3	1	1	....	85
1860	62	34	23	12	2	5	1	2	....	141
1870	92	63	39	14	8	3	5	2	....	226
1880	110	76	55	21	9	7	4	3	1	286
1890	178	105	91	35	14	14	7	1	3	443

POPULATION BY SEX, NATIONALITY, AND COLOR, 1890.

States and Territories.	Total Population.	Sex.		Native & Foreign born.		Native White.			Foreign White.	Total Colored.
		Male.	Female.	Native.	Foreign.	Total.	Native Parents.	Foreign Parents.		
The United States	62,622,250	32,067,880	30,554,370	53,372,703	9,249,547	45,862,023	34,358,348	11,503,675	9,121,867	7,638,360
North Atlantic Div.	17,401,545	8,677,798	8,723,747	13,513,368	3,888,177	13,247,115	8,891,405	4,355,710	3,874,866	279,564
Maine..........	661,086	332,590	328,496	582,125	78,961	580,568	506,703	73,865	78,695	1,823
New Hampshire..	376,530	186,566	189,964	304,190	72,340	303,644	253,629	50,015	72,196	690
Vermont........	332,422	169,327	163,095	288,334	44,088	287,394	225,245	62,149	44,024	1,004
Massachusetts...	2,238,943	1,087,709	1,151,234	1,581,806	657,137	1,561,870	955,430	606,440	653,503	23,570
Rhode Island.....	345,506	168,025	177,481	239,201	106,305	231,832	137,550	94,282	106,027	7,647
Connecticut......	746,258	369,538	376,720	562,657	183,601	550,283	357,235	193,048	183,155	12,820
New York........	5,997,853	2,976,893	3,020,960	4,426,803	1,571,050	4,358,260	2,520,807	1,837,453	1,565,692	73,901
New Jersey......	1,444,933	720,819	724,114	1,115,958	328,975	1,068,596	696,718	371,878	327,985	48,352
Pennsylvania....	5,258,014	2,666,331	2,591,683	4,412,294	845,720	4,304,668	3,238,088	1,066,580	843,589	109,757
South Atlantic Div.	8,857,920	4,418,769	4,439,151	8,649,395	208,525	5,389,833	5,067,379	322,454	202,316	3,265,771
Delaware........	168,493	85,573	82,920	155,332	13,161	126,970	109,355	17,615	13,096	28,427
Maryland........	1,042,390	515,691	526,699	948,094	94,296	732,706	576,285	156,421	93,787	215,897
Dist. of Columbia	230,392	109,584	120,808	211,622	18,770	136,178	107,309	28,869	18,517	75,697
Virginia..........	1,655,980	824,278	831,702	1,637,606	18,374	1,001,933	976,758	25,175	18,189	635,858
West Virginia....	762,794	390,285	372,509	743,911	18,883	711,225	670,214	41,011	18,852	32,717
North Carolina..	1,617,947	799,149	818,798	1,614,245	3,702	1,051,720	1,044,483	7,237	3,662	562,565
South Carolina...	1,151,149	572,337	578,812	1,144,879	6,270	455,865	445,195	10,670	6,143	689,141
Georgia..........	1,837,353	919,925	917,428	1,825,216	12,137	966,465	946,782	19,683	11,892	858,996
Florida..........	391,422	201,947	189,475	368,490	22,932	206,771	190,998	15,773	18,178	166,473
North Central Div.	22,362,279	11,594,910	10,767,369	18,302,165	4,060,114	17,858,470	12,250,155	5,608,315	4,053,457	450,352
Ohio.............	3,672,316	1,855,736	1,816,580	3,213,023	459,293	3,126,252	2,334,517	791,735	458,553	87,511
Indiana	2,192,404	1,118,347	1,074,057	2,046,199	146,205	2,000,733	1,697,998	302,735	146,003	45,668
Illinois..........	3,826,351	1,972,308	1,854,043	2,984,004	842,347	2,927,497	1,882,693	1,044,804	840,975	57,879
Michigan.........	2,093,889	1,091,780	1,002,109	1,550,009	543,880	1,531,283	917,693	613,590	541,601	21,005

POPULATION BY SEX, NATIONALITY, AND COLOR. 1890.

States and Territories.	Total Population.	Sex.		Native & Foreign born.		Native White.			Foreign White.	Total Colored.
		Male.	Female.	Native.	Foreign.	Total.	Native Parents.	Foreign Parents.		
Wisconsin........	1,686,880	874,951	811,929	1,167,681	519,199	1,161,484	434,649	726,835	518,989	6,407
Minnesota........	1,301,826	695,321	606,505	334,470	467,356	829,102	310,951	518,151	467,057	5,667
Iowa..............	1,911,896	994,453	917,443	1,587,827	324,069	1,577,154	1,063,967	513,187	323,932	10,810
Missouri..........	2,679,184	1,385,238	1,293,946	2,444,315	234,869	2,294,176	1,856,477	437,699	234,282	150,726
North Dakota....	182,719	101,590	81,129	101,258	81,461	100,775	37,428	63,347	81,348	596
South Dakota....	328,808	180,250	148,558	237,753	91,055	236,447	127,232	109,215	90,848	1,518
Nebraska.........	1,058,910	572,824	486,086	856,368	202,542	844,644	594,224	250,420	202,244	12,022
Kansas............	1,427,096	752,112	674,984	1,279,258	147,838	1,228,923	992,326	236,597	147,680	50,548
South Central Div.	10,972,893	5,593,877	5,379,016	10,651,072	321,821	7,168,997	6,661,648	507,349	818,579	8,485,817
Kentucky.........	1,858,635	942,758	915,877	1,799,279	59,356	1,531,222	1,406,918	124,304	59,240	268,173
Tennessee........	1,767,518	891,585	875,933	1,747,489	20,029	1,316,738	1,283,481	33,257	19,899	430,881
Alabama..........	1,513,017	757,456	755,561	1,498,240	14,777	819,114	796,421	22,698	14,604	679,299
Mississippi........	1,289,600	649,687	639,913	1,281,648	7,952	537,127	520,354	16,778	7,721	744,749
Louisiana.........	1,118,587	559,350	559,237	1,068,840	49,747	509,555	413,090	96,465	48,840	560,192
Texas.............	2,235,523	1,172,553	1,069,970	2,082,567	152,956	1,594,466	1,408,880	185,586	151,469	489,588
Oklahama.........	61,834	34,733	27,101	59,094	2,740	56,117	51,554	4,568	2,709	3,008
Arkansas.........	1,128,179	585,755	542,424	1,113,915	14,264	804,658	780,950	23,708	14,094	309,427
Western Div.	3,027,613	1,782,526	1,245,087	2,256,703	770,910	2,197,608	1,487,761	709,847	672,649	157,356
Montana..........	132,159	87,882	44,277	89,063	43,096	86,941	55,982	30,959	40,330	4,888
Wyoming.........	60,705	39,343	21,362	45,792	14,913	44,845	30,325	14,520	14,480	1,480
Colorado.........	412,198	245,247	166,951	328,208	83,990	321,962	242,148	79,814	82,506	7,730
New Mexico......	153,593	83,055	70,538	142,334	11,259	131,859	119,320	12,539	10,860	10,874
Arizona..........	59,620	36,571	23,049	40,825	18,795	38,117	24,090	14,027	17,463	4,040
Utah..............	207,905	110,463	97,442	154,841	53,064	153,756	68,452	85,314	53,183	2,006
Nevada...........	45,761	29,214	16,547	31,055	14,706	27,190	14,784	12,406	11,894	6,677
Idaho.............	84,385	51,290	33,095	66,929	17,456	66,554	45,400	21,154	15,464	2,367
Washington......	349,390	217,562	131,828	259,385	90,005	254,319	185,562	68,757	86,194	8,877
Oregon...........	313,767	181,840	131,927	256,450	57,317	253,936	203,969	49,967	47,831	12,000
California.......	1,208,130	700,059	508,071	841,821	366,609	818,119	497,729	320,390	293,553	96,458

UNITS, Scientific: certain dimensions or quantities assumed as standards of measurement in scientific calculations: these are assigned in various departments. Some typical units are here noticed.

Physical and Mechanical Units.—Fundamental scientific units, according to the system adopted by the Brit. Assoc., are based on three quantities, the *centimetre* (unit of length or space), the *gram* (unit of mass), and the *second* (unit of time): the system is named from these three terms, the C. G. S. system. The gram in this case represents the mass of one cubic centimetre of water, really 1·000013 gram. As every scientific unit is based on one or more of the factors of space, mass, and time, it is evident that its value regarded as a quality may be expressed in terms of one or more of them. For these purposes the symbols L for lineal space, M for mass, and T for time, are used. The expression of a quality in terms of L, M, and T gives its dimensions, and has no reference to its absolute size: thus the dimensions of a second or of an hour are the same, namely, the dimensions of time, T. But if for these symbols we substitute the centimetre, the gram, and the second, the dimensions give us the concrete values of any desired fundamental unit. The three fundamental bases of space, mass, and time being given, we may deduce therefrom other units.

Velocity is space traversed divided by the time required in traversing it. Its dimensions are L/T; the C. G. S. unit is one centimetre per second.

Momentum is mass multiplied by velocity: its dimensions are $M \times L/T$, or ML/T; the C. G. S. unit is one gram moving at the rate of one centimetre per second.

Acceleration is velocity acquired (or lost) in a second: its dimensions are $L/T \div T$, or L/T^2; its C. G. S. unit is one centimeter per second.

Force is mass multiplied by acceleration: its dimensions are $M \times L/T^2$, or ML/T^2; its C. G. S. unit is the force required to impart a velocity of one centimetre per second to a mass of one gram. It is termed the *dyne;* approximately equal to $\frac{1}{981}$ gram.

Energy is force exercised along a path in space: its dimensions are $ML/T^2 \times L$, or ML^2/T^2; its C. G. S. unit is the dyne-centimetre or erg—approximately equal to $\frac{1}{13562691}$ foot-pounds.

Work is identical with energy in its dimensions and units.

Density is the quantity of matter per unit of volume: its dimensions are mass ÷ volume or M/L^3; unitary density is that of distilled water at 3°·9 C.

Activity or *Power* is the quantity of work done per unit of time: its dimensions are $ML^2/T^2 \div T$, or ML^2/T^3; its C. G. S. unit is the *erg-second.*

The foregoing illustrates the *theory of dimensions* of fundamental or C. G. S. units. There are many other scientific units which may be termed practical units, of which the following are representative.

Thermal units are generally expressed in weight of water raised one degree in temperature. Under this head are such units as the gram-degree C., the kilogram-degree C., the pound-degree C., or the pound-degree F.—indicating the quantity of heat required to raise the temperature of one gram of water one degree Centigrade, from 0° to 1°, and so on. The gram-degree C. is termed the 'smaller calorie;' the kilogram-degree C. is the 'calorie' proper.

Work and energy units are generally expressed in weight raised a certain height. Of this class are the kilogram-metre, the foot-pound, the gram-centimetre, etc. The last-named, a gram raised one centimetre, would be a C. G. S. unit, except that the erg is accepted in its place.

Power, Activity, Rate of doing work or Rate of expending energy, all which are virtually synonymous, are generally expressed in horse-power. The Brit. and Amer. horse-power is 33,000 lbs. raised one foot per minute.

These units may be reduced from one to the other among themselves by multiplying by the requisite factors. The classic factor is known as Joule's equivalent. He determined that one pound-degree F. was equal to 772 foot-pounds of mechanical energy: this constant is one expression for the mechanical equivalent of heat. The mechanical equivalent of heat may be expressed in other units: thus one gram-degree C. is equal to 42,353·5 gram-centimetres.

Thermo-chemical equivalents are the products of the chemical combining weights of substances by the kilogram-degree C. of heat produced by the combination of one gram of the substance in question.

Electro-chemical equivalents are the quantities of substances decomposed by one coulomb of electricity.

ELECTRICAL UNITS.—There are two classes of electrical units based on the C. G. S. system. One is called the *electro-static* class, of principally theoretical interest, based on the forces exerted between two quantities of electricity. The other is called the *electro-magnetic*, based on the forces exerted between two magnetic poles. The latter is the basis for the electrical units adopted by the Paris Congress of Electricians, 1871. There are five principal units, called C. G. S. units of resistance, units of electro-motive force, etc. Being unsuited for practical use, multiples of them are used in practice, and are called *practical units*. We describe here only the electro-magnetic units.

The C. G. S. unit of CURRENT STRENGTH is the strength of a current which, passing through a circuit one centimetre long, bent into the form of the arc of a circle of one centimetre radius, exerts a force of one dyne on a unit magnetic pole placed at the centre of the circle.

The C. G. S. unit of QUANTITY is equal to a current of one C. G. S. unit of strength lasting for one second.

The C. G. S. unit of ELECTRO-MOTIVE FORCE (often written E. M. F.) is one by which, if a C. G. S. unit of quantity is multiplied, one erg will be produced.

The C. G. S. unit of RESISTANCE is one which requires one C. G. S. unit of E. M. F. to produce in it one unit of current strength.

The C. G. S. unit of CAPACITY is possessed by a condenser when it will hold one C. G. S. unit of quantity when charged to one unit of E. M. F. potential.

The practical units are multiples of these. The following are their names and relations to C. G. S. units:

The unit of CURRENT STRENGTH is called the *Ampere:* it is equal to $\frac{1}{10}$ C. G. S. unit. It is produced by an E. M. F. of 10^8 C. G. S. units (1 volt) acting through a resistance of 10^9 C. G. S. units (1 ohm).

The unit of QUANTITY is called the *Coulomb:* it is equal to $\frac{1}{10}$ C. G. S. unit; and is equal to one ampere lasting for one second.

The unit of E. M. F. is called the *Volt:* it is equal to 10^8 C. G. S. units; and is equal to producing a current of one ampere through a resistance of one ohm.

The unit of RESISTANCE is called the *Ohm:* it is equal to 10^9 C. G. S. units. One volt acting through it produces one ampere of current.

The unit of CAPACITY is called the *Farad:* it is equal to $1 \div 10^9$ C. G. S. units; and it is the capacity of a condenser, which, charged to a potential of one volt, will contain one coulomb of electricity.

To make the above more intelligible, the concrete representations of some may be cited. A single cell of Daniell battery gives an E. M. F. of 1·07 volt. A current of one *ampere* strength decomposing water, disengages 0·172 cubic centimetres of hydrogen and oxygen at 0° C. and 760 mm. barom. per second: this quantity represents, therefore, one *coulomb.* The *ohm* is represented very nearly by the resistance of a column of mercury one sq. millimeter in section, and 106·24 centimetres in length.

Compound units also may be made up from the above. The principal one, the *volt-ampere,* often called the *watt,* is a convenient and much-used unit of power or rate of work: 746 watts are equal to one horse-power.

Many other units of inductance and of other qualities are used; and there is a disposition to introduce new ones. The above are the principal ones, however, and answer nearly all purposes. By placing *meg-* or *mega-* before a unit it is multiplied by 10^6, or one million (meg-ohm = one million ohms). In like manner *myria-* multiplies by 10^4, or ten thousand; *kilo-* by 10^3, or one thousand; *milli-* divides by 10^3, and *micro-*, or *micr-*, divides by 10^6.

UNIVALENT, a. *ū-nĭv'ă-lĕnt* [L. *ūnus,* one; *valens* or *valen'tem,* having strength; *valērĕ,* to have strength]: in *chem.,* applied to an element whose atom is supposed to have only one combining power (see VALENCY).

UNIVALVE, n. *ū'nĭ-vălv* [L. *ūnus,* one; *valvæ,* the folds or leaves of a door]: a shell consisting of a single piece, such that of the snail, periwinkle, limpet, and other gasteropodous mollusks (see GASTEROPODA: MOLLUSCA): ADJ. having one valve or piece only. U'NIVAL'VULAR, a. *-vū-lėr,* or U'NIVALVED, a. *-vălvd,* having one valve only.

UNIVERSAL, a. *ū'nĭ-vėr'săl* [L. *universālis*, belonging to all, universal—from *univer'sus*, whole—from *ūnus*, one; *versus*, pp of *verto*, I turn]; embracing or comprehending the whole; general; all; comprising all the particulars: N. in *logic*, a general abstract conception applicable to each individual or species contained under it. **U'NIVER'SALLY**, ad. *-lĭ*, in a manner to comprehend all. **U'NIVERSAL'ITY**, n. *-săl'ĭ-tĭ*, state of extending to the whole; unlimited application or extent; also **U'NIVER'SALNESS**, n. *-nĕs*. **U'NIVER'SALISM**, n. *-săl-ĭzm*, the doctrines or beliefs of the Universalists. **U'NIVER'SALIST**, n. *-ĭst*, one who holds the doctrine that all men will be saved finally. **UNIVERSAL JOINT**, a joint on the principle of the ball-and-socket joint, which can be moved in any direction.

UNIVERSALISTS, *ū-nĭ-vėr'săl-ĭsts:* sect of Christians whose distinctive peculiarity consists in their belief that all erring or sinful beings will ultimately be brought back to God through the irresistible efficacy of His love manifested and applied through Christ. The ground of their faith in the final salvation of all men is not so much any specific and direct assertions of Scripture to that effect as it is a rational deduction from the whole spirit and design of the gospel. They argue that when an infinitely wise, holy, and benevolent God resolved to create man, it must have been with a view to man's everlasting good; that if God allowed man to be tempted and fall, it must have been because He foresaw that through sorrow and suffering man could rise to higher degrees of perfection; that therefore all punishment (or what, with our limited knowledge, we conceive to be such) is of necessity designed as a remedial agent, and not to satisfy God's indignation as a sovereign at the disobedience of His subjects; that no other view of the subject is compatible with the New Test. representation of God as a 'Father,' or with the oft-repeated declaration (in various terms) that Jesus Christ was a propitiation for the sins of the whole world. In answer to those who adduce against them the express words of the Lord Jesus in various passages (e.g., Matt. xxv. 46), 'These shall go away into eternal punishment: but the righteous into eternal life,' they reply that the word *aiōnios*, translated 'eternal' or 'everlasting,' does not necessarily bear that signification; that properly it does not express the idea of duration at all, either finite or infinite, but was used by the sacred writers rather to denote a mode of existence distinct from and wholly dissimilar to any mere *chronic* state or state of being in *time;* in proof of which they point to such passages as—'*This is life eternal*, that they might know Thee, the only true God, and him whom Thou didst send, even Jesus Christ' (Jn. xvii. 3), where eternal life is affirmed to be *knowledge*—a present disposition of mind and heart toward God in Christ, and not a perpetual hereafter of duration.

U. generally differ from the prevalent bodies of Christians in other important doctrines, though such differences are no essential part of Universalism. Most of the U. agree with Unitarians in rejecting the standard doctrine of the Trinity; but there are eminent examples to the contrary;

and they in general do not engage largely in discussions of Christ's nature—rather ascribing to him the highest honor as the one sufficient Saviour sent forth from God. Mostly they are Pelagian in regard to original sin, and reject the notion that the new birth is something supernatural: see **PELAGIANISM.**

Universalism as a mode of belief is of very ancient origin; and its modern adherents, besides urging its congruity with the divine plan of redemption, as revealed in Scripture, point to the earliest Christian writings—citing passages in favor of the doctrine from many of the church Fathers—Clemens Alexandrinus; Origen; Marcellus of Ancyra; Titus of Bostra; Gregory of Nyssa; Didymus the Blind; Diodorus of Tarsus; Theodore of Mopsuestia; and Victorinus. The doctrine in general is said to have been held by some of the Albigenses, Waldenses, Lollards, and Anabaptists, and it probably had isolated supporters in most of the countries into which the Reformation penetrated. It has had some illustrious sympathizers in the Church of England and among English Nonconformists: among these it is usual somewhat loosely to rank Tillotson, Burnet, Newton, Henry More, Whiston, Jeremy White, Soame Jenyns, David Hartley, William Law, De Quincey, and F. D. Maurice. The same remark is applicable to the French Prot. and German churches; and indeed in all ages a certain class of minds in the church has been disposed toward a hope of some possible universal restoration to holiness and happiness of all fallen intelligences, whether human or angelic. This vague hope—variously traceable to reasoning or to sentiment—is in recent years increasingly manifest in almost all denominations; and its right to exist is not now usually denied in those denominations, so long as it remains an indefinite hope, and does not proceed to any distinct assertion of universal salvation as a doctrine of the Christian faith. It is felt that the proper place for those who make this a *doctrine* is with the Universalists.

The existence of U. as a distinct religious sect is a feature of American rather than of English religious society. The existing denomination of U. dates from the latter half of the 18th c. An English preacher, John Murray, came to America 1770, and began promulgating doctrines later identified with Universalism. He addressed assemblages in various towns along the Atlantic coast from N. J. to Mass. Churches were founded in various places (notably one in Gloucester, Mass.), and ministers installed: there were about 20 ministers in fellowship with Murray 1800. About that time, Hosea Ballou, the real 'father of Universalism' in the United States, was rising to prominence. His teaching found expression in the Profession of Belief adopted by a general convention at Winchester, N. H., 1803. The profession was as follows:

'Art. I. We believe that the Holy Scriptures . . . contain a revelation of the character of God, and of the duty, interest, and final destination of mankind.

'Art. II. We believe that there is one God, whose nature is love, revealed in one Lord Jesus Christ, by one Holy

Spirit of grace, who will finally restore the whole family of mankind to holiness and happiness.

'Art. III. We believe that holiness and true happiness are inseparably connected, and that believers ought to be careful to maintain order, and practice good works; for those things are good and profitable unto men.'

In the several states of the Union, the Universalist churches hold conventions with lay and clerical members as delegates from the local churches. The general convention meets biennially, and is composed of the presidents and secretaries of the state conventions and of clerical and lay delegates from those conventions—each state being entitled to one clerical and two lay delegates, and to an additional number of each class of delegates proportional to the aggregate of its parishes and clergymen. The general convention has jurisdiction over the ecclesiastical organization of the Universalist Church in the United States and the Canadian provinces, and is the final court of appeal in all cases of dispute between state conventions. It is incorporated; and is empowered to hold real and personal estate to the value of $500,000, exclusively for 'diffusion of Christian knowledge by means of missions, publications, and other agencies.' Its funds aggregated (1896) $271,014. The Woman's Centenary Assoc. (organized 1869) is the women's national missionary society, having its auxiliaries in the several states. The Young People's Christian Union (organized 1889) is a national soc. uniting the local Christian unions of young people for religious, philanthropic, missionary, and reform work.

There were in Canada (1897) 11 churches with 312 members; in Scotland, 2 churches with 95 members; in Japan, 7 churches with 117 members. The U. had in the United States (1897): Parishes, 998; preachers, 789; churches, 805; members, 48,501; Sunday schools, 646; chh. edifices, 803; value of chh. property, $9,961,067. The denomination maintained 4 colleges, Tufts College (near Boston), St. Lawrence Univ. (Canton, N. Y.), Lombard Univ. (Galesburg, Ill.), Buchtel Coll. (Akron, O.); 3 theol. schools, 5 academies, some of which are unusually well-equipped. The publishing house had net assets (1897) about $195,000.—See Ballou's *Anc. History of Universalism*, and Whittemore's *Modern History*.

UNIVER'SITY: corporation of teachers or students instituted for promotion of the higher education. The prototype of modern universities may be sought in the schools of Isocrates and Plato at Athens, and the Museum at Alexandria. These institutions resembled the U. of after-times, both in their objects and their organization; and in Greece and Rome, as well as in the later Byzantine empire, something analogous to the degree was conferred on those who had successfully passed through the *trivium* or *quadrivium*, which together comprised what were regarded as the seven liberal arts and sciences. The U. is, however, usually considered to have originated in the 12th or 13th c., and to have grown out of the schools attached to most of the cathedrals and monasteries for the education of churchmen and laymen, and for bringing together the few learned and scientific men in Europe. Such an institute of the higher learning was at first called *studium* or *studium generale*. When a teacher of eminence appeared, such as Abelard or Peter Lombard at Paris, or Irnerius at Bologna, a concourse of admiring students flocked round him; and the members of the *studium generale* formed themselves, for mutual support, into a corporation, on which the general name *universitas* came to be bestowed. In this way the oldest universities arose spontaneously. The crowds drawn from every country of Europe to Paris, Bologna, and other educational resorts had first local immunities bestowed on them for encouragement of learning, and to prevent their resorting elsewhere; and the academical societies thus formed were by papal bulls and royal charters constituted an integral part of the church and state. One great difference existed between the constitution of the two most important universities of early times. In Paris, the teachers alone constituted the corporation; in Bologna, the U. consisted of the students or scholars, who at first held the supreme power, and appointed the academic officials. In this respect Bologna became the model of the subsequent universities of Italy and the provincial universities of France, which were corporations of students; while the universities of Great Britain, Germany, Holland, and Scandinavia were, like Paris, corporations of teachers, and the Spanish universities occupied an intermediate position. With a general resemblance, there was much difference in the constitution and character of the pre-Reformation universities, the form of each being the result of a combination of various circumstances and ideas acting on an originally spontaneous convocation of teachers and scholars. (See PARIS: BOLOGNA: ETC.)

The several *faculties* of a U. are subordinate corporations, consisting of the aggregate of students or teachers in a particular department of knowledge. The number of faculties has varied in different universities. The U. of Paris had at first only a faculty of arts, which, as early as 1169, existed as a separate body, with organization of its own. Faculties of theology, medicine, and canon law were added in the 13th c. Bologna was at first exclusively, as it continued pre-eminently, a school of law. Oxford and Cambridge, in their origin, existed only in the faculty of arts. Some of the smaller French universities, as Orleans and Montpellier, were prohibited from teaching theology, lest they should become rivals to Paris. See UNIVERSITY OF FRANCE.

The granting of degrees was the mode in which the U. reproduced itself. A degree is the recognition of a student having made a certain advance in his career, the degree of doctor or master, in its original idea, entitling the person on whom it was conferred to teach within the limits of the U. Toward the end of the 13th c., Pope Nicholas I. granted to the U. of Paris the right of endowing its graduates with the power of teaching everywhere; and this universal degree, making the recipient of it a member of the community of the learned throughout Christendom, became a link of connection between the universities of Europe. The designation of *Bachelor*, borrowed from the term indicating the probationary stage of knighthood, and implying the lowest stage of U. honor, or the condition of an imperfect graduate, was first introduced in the 13th c. in the U. of Paris, where the bachelor, though intrusted with certain tutorial functions, had no legislative power. The right of teaching (*regendi*) belonged to the master, doctor, or other perfect graduate; and a period of necessary regency was generally fixed, during which the graduates were bound to teach, and after the expiry of which they were at liberty to become non-regents. In the course of time it became the practice to endow a select number of the graduates as public authorized teachers; these privileged and salaried graduates were designated *professors*, and instruction by professors more or less supplanted the original plan of teaching by graduates.

The poverty of a proportion of the students, and the desirableness of domestic superintendence, suggested the institution of halls endowed with property and corporate privileges, called *colleges*. Though originally a provision for poor scholars, they soon assumed the character of boarding-houses for all classes of students, where they were privately trained and prepared for the public lectures. Colleges seem to have been introduced first in Paris, where most of them became appropriated to a particular faculty, or department of a faculty. The college of the Sorbonne (q.v.), founded 1250, came to be in a great measure identified with the theological faculty. Regent masters were named by the faculties as lecturers in the colleges, attendance on whom was made equivalent to attendance on the public courses in the schools of the U., and eventually the college lectures were thrown open to all members of the U.; and it became obligatory in the faculty of arts, and usual in the other faculties, to become a member of some college.

The two highest U. officers have generally been the *rector* and the *chancellor*, the former being the head of the U. in everything except the granting of degrees, which are conferred by the latter as the fountain of honor. Besides the division into faculties, there was in most of the continental universities a division of the graduates and students into *nations,* in respect of the countries to which they belonged. In Paris, the faculty of arts was divided into four nations, French, Picard, Norman, and German or English; and after the 13th c., these four nations under their respective procurators, and the three subsequently added faculties under their deans, constituted the seven component parts of the U. The rector, with the procurators and deans, formed a court having cognizance of all matters relating to discipline, from which there was an appeal to the U., and thence to the parliament of Paris. In Bologna, after faculties of philosophy, medicine, and theology had been added to those of civil and canon law, the students were classed as *ultramontani* and *citramontani,* and each class divided into nations, presided over by their several counselors or procurators.

The U., with modifications according to the altered circumstances of society, has survived the revolutions of seven centuries. At present, Europe has about 100 universities, some dating from the 12th and 13th c., and others of various degrees of antiquity, including some founded in the 19th c. More than 30 belong to Germany and Austria, and 20 to Italy; Holland, Belgium, Scandinavia, Spain, Portugal, Russia, and Greece contain in all about 30 universities. England has five—two ancient, Oxford and Cambridge; three modern, London, Durham, and the Victoria U. Scotland has the five universities of St. Andrews, Glasgow, Aberdeen, Edinburgh, and Dundee; and Ireland has Trinity College, Dublin, and the Queen's (q.v.) University.

Of the universities of Germany, the oldest are Prague, founded 1348, and Vienna 1365. Heidelberg dates from 1386; Leipzig, 1409; Tübingen, 1477; Jena, 1558; Halle, 1694; Göttingen, 1737; Berlin, 1810; and Bonn, 1818. The chief administrative body of the German universities is the Senatus Academicus, composed of the ordinary professors, presided over by a rector elected yearly, or (at Halle and Tübingen) by a chancellor appointed for life, the exercise of discipline being, however, intrusted to a separate court, presided over by a judicial officer called the syndic. There is a recognized gradation in the professorial office. The highest class are *ordinary professors,* generally men of eminence in their respective departments, elected by government out of three candidates submitted by the faculty to which they belong. Next to them are the *extraordinary professors* of the same branches, with smaller salaries; and then the class of *privat-docents,* who, in the course of time, qualify themselves to be extraordinary professors. An ordinary professor must deliver public lectures on the branch to which he is appointed; an extraordinary professor, or privat-docent, may lecture on what subject he pleases. The student is mostly at liberty to attend what lectures he pleases; but licenses to practice certain professions, benefices in the church, and other posts, are given only to persons who have gone through a certain course of U. study. In addition to the above-mentioned classes of instruction, there are teachers of modern languages and other branches not forming part of the curriculum. The *Bursæ*, foundations resembling in their origin the English colleges, and the *Convikt*, or free table, are institutions for benefit of the poorer students, from the former of which is derived the name *burschs*, popularly applied to a student in Germany. The German U. system is admirably adapted for advancement of science; its deficiency is chiefly in appliances for superintending the progress of the individual student. The professor is often more an instructor of the world at large by his writings, than of his students by his lectures.—For some principal German universities, see titles of their respective towns.

The two great English universities are little inferior in antiquity to Paris and Bologna. From the beginning of the 12th to the middle of the 14th c.. Oxford took nearly as important a part in science and political life as Paris itself, with which it was connected by intimate ties, the most eminent doctors of Oxford acting at the same time as regent-masters in Paris. It espoused the cause of the barons against the crown, and while preserving an intimate relation with the church, generally sided against ecclesiastical abuses. Oxford and Cambridge, though not unlike the continental universities in their origin, developed themselves in a manner peculiar to England. From an early period it was the practice of the students to live in common in halls or hostels, rented from the burghers, under the charge of a common teacher. In 1280 there were 34 halls at Cambridge, some containing 20 to 40 masters of arts, and a proportionate number of younger students. In the course of time, colleges were endowed by benevolent persons for maintenance of the poorer students, and the name *socii*, or *fellows*, was applied to the recipients of the endowments. This assistance was originally meant to last no longer than the completion of the course of study; but as most of the *socii* belonged to the ecclesiastical order, and had no other means of support, an understanding gradually arose that the aid furnished by the college should be continued to the *socius* till he obtained a benefice. These provisions gradually increased in number and importance; and a practice was introduced of the colleges receiving wealthier students as boarders—the origin of the class of commoners or students not on the foundation. Most of the halls fell into decay, and those that remained received a collegiate character. In the 15th c. fellowships were no longer endowed to assist students going through their course of study, but as a permanent provision for poor young men of the clerical order who showed taste for learned pursuits; and the degree of master was made a necessary condition for holding them. In this way the colleges became the U.: the U. acquired a semi-monastic character, which has since more or less adhered to it; and a tutorial system of education within the colleges was almost entirely substituted for instructions by U. professors. For two centuries the staff of professors has had little to do with academical education or discipline. The instruction of the student is committed to college tutors, assisted by private tutors, and attendance on the professors is in general required neither for U. rank nor for college emoluments. The tutorial system is defended on the ground of its giving the instructor a greater hold over the student's attention. On the other hand it lacks the advantages arising out of the division of labor in the professorial system; and it is now generally allowed that a mixture of both systems of teaching is better than either alone. An effort has been made by the new statutes to render the professorial office in Oxford and Cambridge less of a sinecure than formerly. One of the most remarkable features of the English universities is their wealth in endowments. According to the *Universities Commission Report* (1874), the annual revenue of Oxford and Cambridge amounted to about £750,000, of which endowments provide £614,000. For the mode of government, see CAMBRIDGE, UNIVERSITY OF: OXFORD UNIVERSITY.

Of the three modern English universities, London U. (q.v.) was established by royal charter 1836. It is wholly unlike the older English foundations, and is substantially an examining board, empowered to grant degrees to all persons found qualified, wheresoever their education may have been pursued. Durham (q.v.) U. was opened for students 1833, and obtained the right of conferring degrees by royal charter 1837. The general provisions for education are similar to those of Oxford and Cambridge. The U. has connected with it a medical college and one of natural science in Newcastle. The charter granted to the Victoria U. in 1880 is meanwhile relevant to Owens College (q.v.) only, but contemplates the affiliation of other suitably equipped colleges.

The universities of Oxford and Cambridge have since 1603 returned two members each to parliament; the U. of Dublin has the same privilege; while London U. elects one.

The universities of Scotland approached much more nearly to the type of Germany and the Low Countries than of England. The teaching as well as governing body were the professors. Though nearly all the students were Scotchmen, they were nevertheless divided, according to continental usage, into four nations, named from the parts of Scotland to which they belonged. The act of 1858 gave a uniform constitution to all the Scottish universities, each of which has now three governing bodies, the senatus academicus, the university court, and the general council; the chief officers being the principal, the rector, the chancellor, and the vice-chancellor. The universities of Edinburgh and St. Andrews, and the universities of Glasgow and Aberdeen, form two constituencies, each represented by one member of parliament.—For the Scotch Universities, see ABERDEEN: DUNDEE: EDINBURGH, UNIVERSITY OF: GLASGOW, UNIVERSITY OF: ANDREWS, ST.

In Ireland, the U. of Dublin was founded 1591 (see DUBLIN, UNIVERSITY OF): it sends two members to parliament.

The Queen's U. in Ireland, having its seat in Dublin Castle, was founded by royal charter 1850, and empowered to grant degrees to students of the three Queen's Colleges (q.v.) respectively at Belfast, Cork, and Galway. A bill passed 1879, altered its title to the Royal U., and gave it right to grant degrees to all qualified comers. The 'Catholic U. of Ireland,' depending for maintenance largely on voluntary subscriptions, has no state charter, but has several affiliated colleges.

The British colonies have several universities. In Canada numerous institutions claim the title: among the more important are McGill U., Montreal; the U. of Toronto; Dalhousie College, at Halifax in Nova Scotia; and Laval U. in Quebec, a Rom. Cath. institution. Australia has well-equipped universities at Melbourne (founded 1854), Sydney (1852), and Adelaide (1874); New Zealand has one at Dunedin; and Cape Colony has a recently founded but thriving U. at Cape Town. Malta has had a U. at Valetta since 1388. The three universities of India, at Calcutta, Madras, and Bombay, have several affiliated colleges.

Of universities in the United States it is difficult to speak generally, as it is impossible to draw a line between those institutions which may fairly be called universities, and the rest of the multitude of 'universities and colleges' of the govt. reports (see COLLEGE). Of these, some are insignificant or rudimentary, but most of them grant degrees of some sort. There are in the west and southwest many establishments that call themselves universities, though differing as widely as possible in rank, some being of a grade scarcely above academies. The total number of 'universities and colleges' (1891) was 415; with total instructors 7,918 (of which 1,431 in preparatory, 3,988 in collegiate, 1,755 in professional depts.); total students 118,581 (preparatory 39,415, collegiate 44,133, graduate dept. 1,998, professional 15,611); endowed professorships 471; vols. in libraries 4,152,053; value of scientific apparatus $8,635,385; of grounds and buildings $64,259,344; permanent productive funds $74,070,415; total annual income $10,801,918; benefactions in previous year $1,006,474.—The U. S. govt. exercises no control over education other than for officers of the army and navy. Some of the schools of higher education have been founded by the particular state in which they stand, and are wholly controlled by the state; some, partly endowed by the state, and to some extent regulated by representatives of the state, are non-sectarian; the numerous sectarian ones are founded and managed by ecclesiastical bodies. Into these three classes the 'universities' may be divided. The best type of college is a corporation with a charter from the state, and supported by endowments, donations, and fees. Its head is called president, generally chosen by trustees; the chief authority is committed to a body of trustees or overseers, some of whom are appointed by the state; while the executive is mainly in the hands of the faculty, consisting of professors and other instructors. The course of study, comprising the chief subjects of a liberal education, extends over four years. The degree usually conferred at graduation is B.A. Instances of colleges worthy to be regarded as universities are Harvard U. (q.v.), Yale U. (q.v.), Cornell U. (q.v.), Princeton U. (q.v.), U. of Michigan (see MICH., U. OF), Columbia U. (q.v.) in New York, Johns Hopkins U. (q.v.), Northwestern U. (q.v.); see others also under their respective titles. (See NEW YORK (State) for the U. of the State of New York.) Oberlin College (q.v.), Ohio, has long done excellent practical work on an extensive scale. A recent institution of high rank is Clark U., Worcester, Mass. Lake Forest U. (Presb.), near Chicago, is rapidly rising in importance. Two institutions now being founded on the grandest and most comprehensive scale, are Leland Stanford, Jr., U. in Cal., and Chicago U. (under Bapt. control) at Chicago.

See (further) COLLEGE: also the several special titles of important colleges in the United States.

Some of the most ancient and famous European universities are now defunct; e.g., those of Cologne (founded 1388). Erfurt (1392); or incorporated with more recent ones. as Wittenberg.

See Savigny, *Geschichte des Römischen Rechts im Mittelalter;* Von Raumer, *Geschichte der Pädagogik;* Von Sybel, *Die Deutschen und die Auswärtigen Universitäten;* Crevier, *Histoire de l'Université de Paris;* Malden, *History of Universities and Academical Degrees;* Kirkpatrick, *Historically Received Conception of a University;* Huber, *History of English Universities;* Wood, *History and Antiquities of Oxford;* Dyer, *History of the University of Cambridge;* Mullinger, *History of the University of Cambridge;* Hart, *German Universities; Reports of Royal Commissions concerning the Universities of Scotland; Report of Commissioners on Oxford and Cambridge Universities.*

UNIVERSITY COLLEGE, Oxford: oldest college in the Univ. of Oxford, said to have been founded by Alfred the Great 872. It was restored by William of Durham, rector of Wearmouth, who, 1249, left money as permanent endowment for a certain number of 'masters,' preference being given to those born nearest the city of Durham. Among its subsequent benefactors are—King Henry IV., who founded (1403) three fellowships, at the request of Bp. Skirlaw of Durham (who also is ranked as a 'benefactor'); Henry Percy, Earl of Northumberland, three fellowships (1442), Sir Simon Bennet, Bart., four fellowships and four scholarships (1681). In 1714 Dr. John Radcliffe founded 2 fellowships, tenable for 10 years by masters of arts, who must travel abroad during 5 years. The present foundation consists of 1 master, 13 fellows, 12 scholars, and several exhibitioners. The patronage consists of 10 livings.

UNIVERSITY (AND SCHOOL) EXTENSION: scheme for making available to the public, outside of the schools, the benefits of systematic oral or written teaching of the various branches of knowledge. It originated in England with the courses of lectures given by James Stuart to women's clubs in the n. of England about 1867-78, which proved very popular, and were soon extended to bodies of workingmen. In connection with the lectures there grew up a demand for a class or review hour for answering questions, clearing up difficulties, etc. He soon formulated plans for systematic study in the intervals of the lectures. At Mr. Stuart's suggestion the system was adopted 1873 by the Univ. of Cambridge (of which Mr. Stuart was a fellow and lecturer), which offered to supply the towns of England with instructors in various departments of knowledge under the control of the univ. The system became rapidly and widely popular. In 1876 the London Soc. for the extension of university teaching was founded, and in 1885 the Univ. of Oxford took up the work. The number of lectures in each course was fixed at 10, to be given weekly, and followed in each case by a conference or class. A syllabus giving an outline of the lectures and suggestions for reference, reading, and questions to be answered in weekly papers, soon became part of the system, which concluded its work with an examination graded by univ. standards. After Oxford took up the system, travelling libraries of about 50 books each on the subjects of the respective courses of study, and summer assemblies on the Chautauqua plan, became added features. About 400 centres of U. E. have now been formed in England, and courses are now given with an aggregate attendance of between 60,000 and 80,000 students.

The system was introduced into the U. S. in 1887 by J. N. Larned, supt. of the Buffalo Library, but gained no general acceptance till taken up in 1890 by the Univ. of Pennsylvania, under the lead of Provost William Pepper, who sent Mr. George Henderson to England expressly to study the methods and results of its working there. The American Soc. for the Extension of Univ. Teaching was formed in Philadelphia. Numerous universities and colleges, including Brown, Columbia, Cornell, and Chicago, took up the work, which has now spread to all parts of the country. The celebrated Chautauqua course (see CHAUTAUQUA INSTITUTIONS) is really a form of U. E. work. Under the direction of Edmund J. James, pres. of the American soc., a seminary for the training of U. E. lecturers was established in 1893, and summer meetings for U. E. students instituted. For 1894–5, the American soc. for the extension of university teaching reported 126 courses of 723 lectures, with total attendance 20,000; in addition to which more than 800 lectures in similar lines were given by various universities and colleges working independently—the total attendance being estimated at 100,000. (In these statistics the Chautauqua work is not included.) Magazines issued in the interests of the movement are: *The Citizen* (Phila.); *The University Extension Journal* (London, Constable & Co.); in addition to these are the circulars, pamphlets, etc., of the American Soc. (address: University Extension, Fifteenth and Chestnut streets, Phila.); circulars on the N. Y. state work may be obtained from Melvil Dewey, Albany, N. Y.

The fees of membership are exceedingly low—viz., for registration, with one course of 10 lectures or lessons, $1; additional courses, each $1; registration, with 6 syllabuses, $1; additional syllabuses, 20 cts. each, or 6 for $1; registration, with one printed course of lectures, $1; additional printed courses, $1 each; annual membership, with 6 printed courses, $5; annual membership, with 25 lecture or lesson coupons for any course, $5. Liberal provision is made, on similarly reasonable terms, for courses of lectures in all parts of the United States.

UNIVERSITY OF CHICAGO: see CHICAGO, UNIVERSITY OF. [Likewise, for similar Titles.]

UNIVERSITY OF FRANCE: term specifically applied to the whole French governmental system of education as centralized and controlled in one body. In France, since the revolution, the word University has acquired a meaning widely different from that which it bears in other countries—the expression 'Université de France' being nearly equivalent to 'national system of education of France.' All the old universities of the country having been swept away at the Revolution, education had fallen into abeyance. After various attempts at the establishment of primary, secondary, and central schools in the departments, the imperial govt. adopted a new system, by which the whole educational machinery of the country was centralized at Paris, and committed to a body called the University, with a grand-master at its head, assisted by a council. The system has since undergone various alterations. The governing body, as well for higher educational institutes as for elementary schools, is the ministry of public instruction, supported by a supreme educational court and 18 inspectors-general. France is divided into 16 educational districts, called *Academies*, within whose bounds exist one or more of the *Faculties* of theology, law, medicine, and science and literature. Such faculties are found in 18 towns besides Paris; but only in Paris are the five co-existing faculties organized into a university. The monopoly, hitherto enjoyed by the U. of F., of opening schools of law and medicine, and of conferring degrees, was abolished 1875. The Rom. Catholics have availed themselves of this to institute colleges claiming the dignity of universities, but under ecclesiastical control: thus there is now a 'Catholic Univ. of Paris.' The official lists of 1880 recognized 7 faculties of theology, 12 of law, 15 of the sciences, 15 of letters, and 6 of medicine and pharmacy.—For the Paris faculties of the U. of F., see SORBONNE. The Collége de France (q.v.) is a quite distinct institution, independent of the U. of France.

UNIVERSITY SETTLEMENTS: see COLLEGE AND UNIVERSITY SETTLEMENTS.

UNIVOCAL, a. *ū-nĭv′ō-kăl* [L. *ūnus*, one; *vocālis*, sounding, sonorous—from *vox* or *vōcem*, a voice: F. *univoque;* It. *univoco*, univocal]: having one meaning only; having unison of sound; unmistakable: N. a word having one signification or meaning. UNIV′OCALLY, ad. *-lĭ*, in a manner not to be mistaken.

UNJOINED, a. *ŭn-joynd′:* not connected; not united.

UNJOINTED, a. *ŭn-joynt′ĕd:* having no joinings; having no articulation, as the stem of a plant.

UNJUDGED, a. *ŭn-jŭjd′:* not tried; not censured rashly.

UNJUST, a. *ŭn-jŭst′:* not just; not actuated or acting by principles of right or equity; contrary to the standard of right; not equitable. **Unjust′ly**, ad. wrongfully.

UNJUSTIFIABLE, a. *ŭn-jŭs′tĭ-fī′ă-bl:* that cannot be proved to be right; that cannot be defended. **Unjus′tifi′ably**, ad. **Unjus′tified**, a. not vindicated; not pardoned. **Unjus′tifi′ableness**, n. *-ă-bl-nĕs*, the quality of being unjustifiable.

UNKEMPT, a. *ŭn-kĕmt′* [see Comb 1]: uncombed; unpolished.

UNKENNEL, v. *ŭn-kĕn′nĕl:* to drive from a hole, as a fox; to release from a kennel; to rouse from secrecy. **Unken′nelling**, imp. **Unken′nelled**, pp.: Adj. let loose from confinement; driven from his hole, as a fox.

UNKENT, a. *ŭn-kĕnt:* in *OE.* and *Scot.*, unknown.

UNKEPT, a. *ŭn-kĕpt′:* not retained or preserved; not observed.

UNKIAR-SKELESSI, *ûn′kĭ-âr-skā-lĕs′sē:* small town near Scutari, on the Asiatic shore of the Bosporus, giving name to a treaty concluded there between Turkey and Russia 1833. This treaty, which consisted of six articles, was for mutual defensive alliance; but a secret article was subjoined, by which the sultan agreed to close the Strait of the Dardanelles against all foreign vessels of war whenever Russia should be at war. By the treaty at London 1841, which annulled the stipulations of U.-S., it was agreed that no foreign ship of war should enter the strait except with the permission of Turkey.

UNKIND, a. *ŭn-kīnd':* not benevolent; not obliging, harsh; cruel; in *OE.*, unnatural. UNKIND'LY, ad. in an unkind manner; without kindness or affection; in *OE.*, in a manner contrary to nature: ADJ. harsh; disagreeable; in *OE.*, unnatural; contrary to nature; malignant. UNKIND'NESS, n. want of good-will; disobliging treatment; want of natural affection. UNKIND'LINESS, n. quality of being unkindly; malignity; ill-will.

UNKING, v. *ŭn-kĭng':* to deprive of royalty. UNKING-LIKE, a. *ŭn-kĭng'līk*, or UNKING'LY, a. unbecoming a king; not noble.

UNKISS, v. *ŭn-kĭs':* in *OE.*, to cancel an oath or obligation by kissing again. UNKISSED, a. *ŭn-kĭst'*, nót kissed.

UNKNIGHTLY, a. *ŭn-nīt'lĭ:* unbecoming a knight.

UNKNIT, v. *ŭn-nĭt':* to separate; to loose; to open out work that has been knit.

UNKNOT, v. *ŭn-nŏt':* to untie; to free from knots. UNKNOT'TED, a. *-tĕd*, untied.

UNKNOWING, a. *ŭn-nō'ĭng:* not knowing; ignorant. UNKNOW'INGLY, ad. UNKNOW'ABLE, a. *-nō'ă-bl*, that cannot be known; incapable of being known: N. that which cannot be known. UNKNOWN', a. not known; not understood clearly; doubtful; not recognized by remembrance; not ascertained; greater than is imagined; in *OE.*, not having had intercourse with; not having had communication: N. one who cannot be identified; a stranger. UNKNOWN TO, not within the knowledge of. THE UNKNOWN, that which is not or cannot be known.

UNLABORIOUS, a. *ŭn'lă-bō'rĭ-ŭs:* not laborious; not difficult to be done. UN'LABO'RIOUSLY, ad. UNLA'BORED, a. not tilled; that offers without effort; easy; not stiff, as speech.

UNLACE, v. *ŭn-lās':* to loose from a fastening of cord or strings passed through holes; in *OE.*, to divest of ornaments or dress. UNLAC'ING, imp. UNLACED', pp.

UNLADE, v. *ŭn-lād':* to unload; to take out the cargo of. UNLA'DING, imp. UNLA'DEN, pp.

UNLADYLIKE, a. *ŭn-lā'dĭ-līk:* not becoming a lady.

UNLAID, a. *ŭn-lād':* not placed; not fixed; not allayed or pacified.

UNLAMENTED, a. *ŭn'lă-mĕnt'ĕd:* not regretted; not mourned for.

UNLASH, v. *ŭn-lăsh':* to loose, as what is bound with a rope to something else.

UNLATCH, v. *ŭn-lăch':* to open or loose by lifting the latch.

UNLAVISHED, a. *ŭn-lăv'ĭsht:* not lavished; not wasted; not thrown away.

UNLAW, v. *ŭn-law':* in *OE.*, to take from law its authority; in *Scots law*, to impose a fine on: N. in *Scots law*, a fine or penalty imposed on law-breakers; an offense against the law.

UNLAWFUL, a. *ŭn-law'fûl:* contrary to law; illegal; bastard. **Unlaw'fully**, ad. **Unlaw'fulness**, n. state of being illegal or illegitimate.

UNLAY, v. *ŭn-lā':* to untwist, as the strands of a rope.

UNLEARN, v. *ŭn-lėrn':* to forget something that has been learned. **Unlearn'ing**, imp. **Unlearned'**, pp. *-lėrnd'*, forgotten: **Adj.** *ŭn-lėrn'ĕd*, ignorant; not instructed; not gained by study; in *OE.*, not suitable to a learned man. **Unlearn'edly**, ad.

UNLEAVENED, a. *ŭn-lĕv'nd:* not fermented, as bread.

UNLEAV'ENED BREAD: as especially assigned for use in the Eucharist (q.v.), bread made without leaven or yeast; bread in which no ferment or leaven has been used.—Among the Jews the paschal lamb was eaten with U. B. The use of U. B. in the Eucharist has long been a subject of controversy between the Latin Church on one hand and the Greek and other oriental churches on the other; with the latter of whom the Reformed churches in later times have conformed in their practice at the Lord's Supper. The early history of the usage is obscure; but the Western Church had certainly, from a very remote date, employed *azyms*, or U. B.; nor was this usage made a subject of controversy with the Latins by Photius, on occasion of the dispute between the churches, which arose during his patriarchate. In the later controversy, however, under Michael Cerularius (see **Greek Church**), the question of azyms became very prominent, and the diversity of practice is still in controversy between the Greeks and Latins. The principal argument alleged by the advocates of leavened bread is founded on the assumption that the Last Supper of the Lord Jesus took place on the eve of the Passover, i.e., on the 13th day of the month Nisan, on which day common bread, and not the azyms, must have been used; and on this and some other grounds, some writers, even among the Rom. Catholics, especially the learned Jesuit Sirmond, have maintained that the Last Supper was actually celebrated in leavened bread. On the other hand, however, it is contended that the Last Supper, being held in the evening of that day, was, in the strictest sense, Christ's celebration of the Passover, and therefore (Ex. xii. 8–20), that the bread can have been no other than azym, or unleavened. All Rom. Catholic writers, and the more learned among the Greeks, are agreed that the Eucharist may be *validly* consecrated with either leavened or unleavened bread.

UNLESS, conj. *ŭn-lĕs'* [originally written *onless*, *onlesse*, a combination of *on* with *less*]: except; if not; supposing that not: also used prepositionally by Shakespeare.

UNLESSONED, a. *ŭn-lĕs'nd:* not taught.

UNLETTERED, a. *ŭn-lĕt'tėrd:* not learned; untaught; illiterate; ignorant; not marked with letters.

UNLEVEL, a. *ŭn-lĕv'ĕl:* not even. **Unlev'elled**, a. not levelled; not laid even.

UNLICENSED, a. *ŭn-lī′sĕnst:* not licensed; without permission by authority; carried on without authority.

UNLICKED, a. *ŭn-likt′:* shapeless; not formed to smoothness; rough; uncultured.

UNLIGHTED, a. *ŭn-līt′ĕd:* not lighted, as a lamp; not kindled; not illuminated.

UNLIGHTSOME, a. *ŭn-līt′sŭm:* dark; wanting light.

UNLIKE, a. *ŭn-līk′:* having no resemblance; dissimilar. UNLIKE′LY, a. improbable; such as cannot be reasonably expected: AD. improbably. UNLIKE′NESS, n. want of resemblance. UNLIKE′LIHOOD, n., or UNLIKE′LINESS, n. state of being unlikely; improbability.

UNLIMBER, v. *ŭn-lĭm′bėr:* in *artillery*, to detach the limber from (a field-piece). UNLIM′BERING, imp. UNLIM′BERED, pp.

UNLIMITED, a. *ŭn-lĭm′ĭ-tĕd:* not limited; having no bounds; indefinite; not restrained. UNLIM′ITEDNESS, n. *-nĕs*, the state of being unlimited. UNLIM′ITABLE, a. *-tă-bl*, in *OE.*, incapable of being limited.

UNLINEAL, a. *ŭn-lĭn′ĕ-ăl:* not lineal; not coming in the order of succession.

UNLINING, n. *ŭn-līn′ing:* in *bot.*, the separation of parts originally united; same as CHORISIS.

UNLINK, v. *ŭn-lĭngk′:* to separate links; to disconnect; to loosen.

UNLIQUEFIED, a. *ŭn-lĭk′wĕ-fīd:* not dissolved.

UNLIQUIDATED, a. *ŭn lĭk′wĭ-dā-tĕd:* not liquidated or settled; not fixed as regards amount; not paid.

UNLOAD, v. *ŭn-lōd′:* to discharge of a load or cargo, as a ship; to disburden; to take out the charge of a gun. UNLOAD′ING, imp. UNLOAD′ED, pp.

UNLOCATED, a. *ŭn-lō′kā-tĕd:* not located or placed; in the *United States*, unsurveyed and not laid out, as land.

UNLOCK, v. *ŭn-lŏk′:* to unfasten; to lay open. UNLOCKED′, a. not made fast.

UNLOOKED-FOR, a. *ŭn-lûkt′fŏr:* not expected; not foreseen. UNLOOKED′, a. in *OE.*, unlooked-for.

UNLOOSE, v. *ŭn-lôs′:* to loose; to untie; to let go from a fastening; to unravel. UNLOOS′ING, imp. UNLOOSED′, pp. set free; untied. UNLOOSEN, v. *ŭn-lôs′n*, to untie.

UNLOVED, a. *ŭn-lŭvd′:* not loved. UNLOVE′LY, a. destitute of the qualities that attract love; not amiable; not beautiful. UNLOVE′LINESS, n. want of beauty or the qualities that attract love. UNLOV′ING, a. not fond. UNLOV′INGLY, ad.

UNLUCKY, a. *ŭn-lŭk′ĭ:* unfortunate; not successful; subject to frequent misfortunes; ill-omened. UNLUCK′ILY, ad. unfortunately. UNLUCK′INESS, n. ill-fortune.

UNMADE, a. *ŭn-mād′:* not yet formed: see UNMAKE.

UNMAIDENLY, a. *ŭn-mād′n-lĭ:* not becoming a maiden.

UNMAIMED, a. *ŭn-māmd′:* not maimed; not disabled in any limb; sound.

UNMAKE, v. *ŭn-māk′:* to destroy the essential form and qualities of; to deprive of form or being. **Unma′king**, imp.

UNMALLEABLE, a. *ŭn-măl′lĕ-ă-bl:* not malleable; not capable of being hammered into a plate.

UNMAN, v. *ŭn-măn′:* to deprive of the qualities of a man; to dishearten; to deject; to emasculate; to deprive of men. **Unman′ning**, imp. **Unmanned′**, pp. a. deprived of the fortitude proper to a man; dispirited; dejected; not furnished with men, as a ship or fort; in *falconry*, not tamed. **Unman′like**, a. not becoming a man. **Unman′ly**, a. unbecoming a man; not worthy of a noble mind; base; cowardly. **Unman′liness**, n. the state or quality of being unmanly. **Unman′ful**, a. not becoming a man.

UNMANAGEABLE, a. *ŭn-măn′āj-ă-bl:* not manageable; not easily restrained or directed; not easily wielded. **Unman′ageably**, ad. **Unman′ageableness**, n. the state of being unmanageable. **Unman′aged**, a. not tutored; not broken in.

UNMANNERLY, a. *ŭn-măn′nėr-lĭ:* ill-bred; rude in behavior: Ad. in *OE.*, uncivilly. **Unman′nered**, a. uncivil; rude. **Unman′nerliness**, n. rudeness of behavior.

UNMANUFACTURED, a. *ŭn-măn′ū-făk′tūrd:* not manufactured; not wrought into proper form for use.

UNMANURED, a. *ŭn′mă-nūrd′:* not enriched by manure.

UNMARKED, a. *ŭn-mârkt′:* having no mark; not regarded; undistinguished.

UNMARKETABLE, a. *ŭn-mâr′kĕt-ă-bl:* not fit for sale.

UNMARRED, a. *ŭn mârd′:* not injured or spoiled.

UNMARRIAGEABLE, a. *ŭn-măr′ĭj-ă-bl:* too young to be married; disqualified, as by youthfulness, for marriage. **Unmar′ried**, a. having no husband or wife.

UNMARSHALLED, a. *ŭn-mâr′shald:* not disposed or arrayed in order.

UNMASK, v. *ŭn-mâsk′:* to strip off any disguise; to lay open; to expose to view. **Unmask′ing**, imp. **Unmasked′**, pp.: Adj. open; exposed to view.

UNMATCHED, a. *ŭn-mâcht′:* having no match or equal. **Unmatch′able**, a. *-ă-bl*, not to be matched.

UNMEANING, a. *ŭn-mēn′ĭng:* having no meaning; not expressive; not indicating intelligence. **Unmean′ingly**, ad. **Unmean′ingness**, n. the state of being unmeaning. **Unmeant′**, a. *-mĕnt*, not intended.

UNMEASURABLE, a. *ŭn-mĕzh′ū-ră-bl:* boundless; immeasurable. **Unmeas′urably**, ad. *-blĭ*, beyond all bounds; beyond measure. **Unmeas′ured**, a. not measured; plentiful beyond measure; immense; infinite.

UNMEDITATED, a. *ŭn-mĕd′ĭ-tā-tĕd:* not meditated; not prepared by previous thought.

UNMEET, a. *ŭn-mēt′:* not fit or proper; not worthy or suitable. UNMEET′LY, ad. in an unmeet manner; not properly. UNMEET′NESS, n. unfitness; unsuitableness.

UNMELLOWED, a. *ŭn-mĕl′lōd:* not fully matured; not toned down, as by age.

UNMELODIOUS, a. *ŭn′mĕl-ō′dĭ-ŭs:* wanting melody; harsh. UN′MELO′DIOUSLY, ad. UN′MELO′DIOUSNESS, n. the state of being unmelodious.

UNMELTED, a. *ŭn-mĕlt′ĕd:* not melted; undissolved; not softened.

UNMENTIONABLE, a. *ŭn-mĕn′shŭn-ă-bl:* not to be mentioned or named. UNMEN′TIONABLES, n. plu. a familiar euphemism for trousers. UNMEN′TIONED, a. not named.

UNMERCENARY, a. *ŭn-mėr′sė-nȧr-ĭ:* not mercenary; not venal; disinterested.

UNMERCHANTABLE, a. *ŭn-mėr′chănt-ă-bl:* that cannot be sold; unsalable.

UNMERCIFUL, a. *ŭn-mėr′sĭ-fûl:* cruel; pitiless; not disposed to spare or forgive; hard-hearted. UNMER′CIFULLY, ad. UNMER′CIFULNESS, n. want of tenderness and compassion toward those in one's power.

UNMERITED, a. *ŭn-mĕr′ĭ-tĕd:* not deserved; unjust. UNMER′ITABLE, a. *-ĭ-tă-bl,* in *OE.*, having no merit.

UNMILITARY, a. *ŭn-mĭl′ĭ-tėr-ĭ:* not according to military rules or customs; not military in character, appearance, or the like.

UNMILKED, a. *ŭn-mĭlkt′:* not milked.

UNMILLED, a. *ŭn-mĭld′:* not milled, as coin.

UNMINDED, a. *ŭn-mīnd′ĕd:* not heeded. UNMIND′FUL, a. not attentive; regardless. UNMIND′FULLY, ad. UNMIND′FULNESS, n. the state of being unmindful.

UNMINGLED, a. *ŭn-mĭng′gld:* not mixed; pure.

UNMINISTERIAL, a. *ŭn′mĭn-ĭs-tē′rĭ-ăl:* not ministerial; not pertaining to or befitting a minister. UN′MINISTE′RIALLY, ad.

UNMISSED, a. *ŭn-mĭst′:* not missed; not perceived to be gone or lost.

UNMISTAKABLE, a. *ŭn′mĭs-tā′kă-bl:* that cannot be mistaken or misunderstood; also UNMISTAKEABLE. UN′MISTA′KEN, a. not wrong in opinion or judgment; sure.

UNMITIGABLE, a. *ŭn-mĭt′ĭ-gă-bl:* that cannot be alleviated or soothed. UNMIT′IGATED, a. not softened in severity or hardness; not lessened.

UNMIXED, a. *ŭn-mĭkst′:* not mingled; pure; unadulterated.

UNMODERNIZED, a. *ŭn-mŏd′ėrn-īzd:* not modernized; not adapted to modern ideas or style.

UNMODIFIED, a. *ŭn-mŏd′ĭ-fīd:* not altered in form. UNMOD′IFI′ABLE, a. not to be modified or qualified in meaning. UNMOD′IFI′ABLENESS, n.

UNMOD'IFIED-DRIFT, n.: in *geol.*, a Canadian glacial deposit laid down while glacial action was at its maximum in N. America; called also *Hardpan*.

UNMODISH, a. *ŭn-mō'dĭsh:* not in the mode; not fashionable.

UNMODULATED, a. *ŭn-mŏd'ū-lā-tĕd:* not modulated; not varied in a musical manner, as a sound or musical note.

UNMOIST, a. *ŭn-moyst':* not moist or wet. **UNMOISTENED**, a. *ŭn-moys'nd,* not made moist or humid.

UNMOLD, v. *ŭn-mōld':* to change as to the form. **UNMOLD'ED**, a. not shaped or formed.

UNMOLESTED, a. *ŭn'mō-lĕst'ĕd:* not molested; not disturbed; free from disturbance.

UNMOOR, v. *ŭn-mŏr':* to loose from anchorage or moorings, as a ship; to bring to the state of riding with a single anchor. **UNMOOR'ING**, imp. **UNMOORED'**, pp.

UNMORTIFIED, a. *ŭn-mŏr'tĭ-fīd:* not mortified; not subdued by sorrow.

UNMOTHERLY, a. *ŭn-mŭth'ėr-lĭ:* not becoming a mother.

UNMOUNTED, a. *ŭn-mownt'ĕd:* not mounted, in any sense of the verb *mount.*

UNMOVABLE, a. *ŭn-mŏv'ă-bl:* that cannot be moved; firm; immovable. **UNMOV'ABLY**, ad. **UNMOVED'**, a. not transferred from one place to another; not changed in purpose; firm; not having the passions excited; tranquil. **UNMOV'EDLY**, ad. **UNMOV'ING**, a. not moving; having no power to affect the passions.

UNMUFFLE, v. *ŭn-mŭf'l:* to remove a muffler or the mufflings from; to uncover.

UNMURMURING, a. *ŭn-mėr'mėr-ĭng:* not complaining. **UNMUR'MURED**, a. not complained of.

UNMUSICAL, a. *ŭn-mū'zĭ-kăl:* not musical; harsh; not pleasing to the ear. **UNMU'SICALLY**, ad.

UNMUTILATED, a. *ŭn-mū'tĭ-lā-tĕd:* not mutilated; entire.

UNMUZZLE, v. *ŭn-mŭz'l:* to loose from a muzzle; remove the muzzle from; to free from restraint. **UNMUZ'ZLING**, imp. **UNMUZ'ZLED**, pp.

UNNA, *ŭn'nâ:* small town of Prussia, in Westphalia, 19 m. n.w. of Arnsberg. It was formerly fortified, was one of the Hanse Towns (q.v.) and had a part in the history of the Femgerichte (q.v.). About a m. to the north are the famous salt-works of Königsborn, which yield 120,000 cwts. of salt annually. The principal industries are weaving (linen and hosiery), brewing, and distilling. Pop. (1880) 7,690.

UNNAMED, a. *ŭn-nāmd':* not named or mentioned.

UNNAPPED, a. *ŭn-năpt':* without nap, as cloth.

UNNATURAL, a. *ŭn-năt'ū-răl* or *-năt'chû-răl:* contrary to nature; acting without the affections of our common humanity; not agreeable to the real condition of persons or things; forced; artificial; affected. **UNNAT'URALLY**, ad. **UNNAT'URALIZE**, v. *-ăl-īz,* to divest of the affections which have been implanted by nature; to divest of the character and status of a subject or citizen. **UNNAT'URALIZED**, a. *-īzd,* not naturalized; not admitted to the privileges of a subject or citizen.

UNNAVIGABLE, a. *ŭn-năv'ĭ-gă-bl:* not navigable. **UNNAV'IGATED**, a. not passed over in ships.

UNNECESSARY, a. *ŭn-nĕs'ĕs-sĕr-ĭ:* needless; useless; not required by the circumstances of the case. **UNNEC'ESSARILY**, ad. needlessly. **UNNEC'ESSARINESS**, n. *-nĕs,* uselessness; needlessness.

UNNEIGHBORLY, a. *ŭn-nā'bėr-lĭ:* not neighborly; not in keeping with the duties or obligations implied in being neighbors; not kind and friendly: AD. in *OE.*, in a manner not becoming a neighbor.

UNNERVE, v. *ŭn-nėrv':* to deprive of force or strength; to enfeeble. **UNNERV'ING**, imp. **UNNERVED'**, pp. deprived of nerve or strength: ADJ. weak; feeble.

UNNOTED, a. *ŭn-nō'tĕd:* not noted; not observed or remarked; not distinguished; not recorded.

UNNOTICED, a. *ŭn-nō'tĭst:* not regarded or observed; not treated with the usual marks of respect; not hospitably entertained; slighted.

UNNUMBERED, a. *ŭn-nŭm'bėrd:* not numbered or enumerated; indefinitely numerous; innumerable.

UNOBJECTIONABLE, a. *ŭn'ŏb-jĕk'shŭn-ă-bl:* not liable to objection; that need not be condemned as faulty or improper.

UNOBNOXIOUS, a. *ŭn'ŏb-nŏk'shŭs:* not liable; not exposed to hurt; not obnoxious.

UNOBSCURED, a. *ŭn'ŏb-skūrd':* not darkened or clouded.

UNOBSERVABLE, a. *ŭn'ŏb-zėr'vă-bl:* not discoverable. **UN'OBSER'VANT**, a. not attentive; heedless. **UN'OBSERVED'**, a. not noticed; not regarded; not heeded. **UN'OBSER'VEDLY**, ad. **UN'OBSER'VING**, a. inattentive; heedless. **UN'OBSER'VANCE**, n. *-văns,* state or quality of being unobservant; disregard.

UNOBSTRUCTED, a. *ŭn'ŏb-strŭkt'ĕd:* not obstructed; not filled with impediments; not hindered. **UN'OBSTRUC'TIVE**, a. not presenting any obstacle.

UNOBTAINABLE, a. *ŭn'ŏb-tān'ă-bl:* that cannot be obtained; not within reach or power. **UN'OBTAINED'**, a. not gained; not acquired.

UNOBTRUSIVE, a. *ŭn'ŏb-trô'sĭv:* not forward; modest. **UNOBTRU'SIVELY**, ad.

UNOCCUPIED, a. *ŭn-ŏk'kū-pīd:* not occupied; not possessed; not engaged in business; not employed, as time; being at leisure.

UNOFFENDING, a. *ŭn'ŏf-fĕnd'ing:* not offending; not giving offense; harmless; not sinning.

UNOFFICIAL, a. *ŭn'ŏf-fĭsh'ăl:* not official; not pertaining to an office or public trust; not proceeding from the proper authority; in a private capacity. **UN'OFFI'CIOUS**, a. not forward or intermeddling.

UNOPENED, a. *ŭn-ō'pnd:* not opened; remaining close, shut, or sealed.

UNOPERATIVE, a. *ŭn-ŏp'ĕr-ā-tĭv:* producing no effect; inoperative.

UNOPPOSED, a. *ŭn'ŏp-pōzd':* not opposed; not resisted; not meeting with any hindrance.

UNOPPRESSED, a. *ŭn'ŏp-prĕst':* not unduly burdened. **UN'OPPRESS'IVE**, a. not oppressive or burdensome.

UNORGANIZED, a. *ŭn-ŏr'găn-īzd:* not organized; not having the parts arranged and constituted; destitute of organic structure.

UNORIGINATED, a. *ŭn'ō-rĭj'ĭ-nā-tĕd:* having no birth or creation. **UN'ORIG'INAL**, a. *-ĭ-năl*, not original; having no birth; ungenerated.

UNORNAMENTAL, a. *ŭn-ŏr'nă-mĕnt'ăl:* not ornamental—hence, plain; undecorated. **UNOR'NAMENTED**, a. not adorned.

UNORTHODOX, a. *ŭn-ŏr'thŏ-dŏks:* not orthodox; heterodox. **UNOR'THODOXY**, n. want of orthodoxy.

UNOSTENTATIOUS, a. *ŭn-ŏs'tĕn-tā'shŭs:* not ostentatious; not making a display; not showy; modest; unassuming. **UN'OSTENTA'TIOUSLY**, ad. **UN'OSTENTA'TIOUSNESS**, n. *-nĕs*, freedom from ostentation.

UNOWED, a. *ŭn-ōd':* not owed; in *OE.*, having no owner.

UNOWNED, a. *ŭn-ōnd':* not owned or acknowledged, as an act, etc.; having no known owner; not divulged.

UNOXYGENATED, a. *ŭn-ŏks'ĭ-jĕn-ā-tĕd*, or **UNOX'YGENIZED**, a. uncombined with oxygen.

UNPACIFIED, a. *ŭn-păs'ĭ-fīd:* not pacified; not appeased; not calmed.

UNPACK, v. *ŭn-păk':* to unloose or open and remove the contents of, as a bale of cloth, a box, or the like; to disburden. **UNPACK'ING**, imp. **UNPACKED'**, pp.: **ADJ.** not filled closely; not selected unjustly, as an *unpacked* jury.

UNPAID, a. *ŭn-pād':* not paid, applied to one who performs the duties of an office gratuitously; not discharged, as a debt; not having received wages, as workmen. **UNPAID FOR**, a. taken on credit.

UNPAINED, a. *ŭn-pānd':* suffering no pain.

UNPAINTED, a. *ŭn-pānt'ĕd:* not painted.

UNPAIRED, a. *ŭn-pārd':* not paired or coupled.

UNPALATABLE, a. *ŭn-păl'ă-tă-bl:* not agreeable to the taste; not such as to be relished; disagreeable.

UNPARAGONED, a. *ŭn-păr'ă-gŏnd:* unequalled; unmatched.

UNPARALLELED, a. *ŭn-păr'ăl-lĕld:* having no parallel or equal; unequalled.

UNPARDONABLE, a. *ŭn-pâr'dn-ă-bl:* not to be forgiven; that cannot be remitted, as a sin. **UNPAR'DONED**, a. not granted forgiveness. **UNPAR'DONING**, a. not disposed to pardon or forgive.

UNPARLIAMENTARY, a. *ŭn-pâr'lĭ-mĕnt'ă-rĭ:* contrary to the usages or rules of parliament, or of a deliberative or legislative body. **UNPAR'LIAMENT'ARINESS**, n. *-nĕs*, the state of being unparliamentary.

UNPARTED, a. *ŭn-pârt'ĕd:* not separated; not divided.

UNPATENTED, a. *ŭn-păt'ĕnt-ĕd:* not granted or secured by a patent.

UNPATHED, a. *ŭn-pâthd':* untracked; untrodden; with no trace of a path.

UNPATHETIC, a. *ŭn'pă-thĕt'ĭk:* not pathetic; not adapted to excite emotion.

UNPATRIOTIC, a. *ŭn-pā'trĭ-ŏt'ĭk:* not patriotic.

UNPATRONIZED, a. *ŭn-pā'trō-nīzd':* not receiving countenance or friendly support.

UNPAVED, a. *ŭn-pāvd':* not paved; in *OE.*, emasculated.

UNPAY, v. *ŭn-pā':* to undo.

UNPEACEABLE, a. *ŭn-pēs'ă-bl:* in *OE.*, quarrelsome; not peaceable.

UNPEG, v. *ŭn-pĕg':* to open a thing closed with a peg or pegs; to unloose.

UNPENETRATED, a. *ŭn-pĕn'ĕ-trā-tĕd:* not entered or pierced.

UNPENSIONED, a. *ŭn-pĕn'shŭnd:* not pensioned; not rewarded by a pension.

UNPEOPLE, v. *ŭn-pē'pl:* to deprive of inhabitants; to depopulate. **UNPEO'PLED**, a. depopulated; desolate.

UNPERCEIVABLE, a. *ŭn'pėr-sēv'ă-bl:* that cannot be perceived, discerned, or observed. **UNPERCEIV'ABLY**, ad. **UNPERCEIVED'**, a. not observed; not noticed.

UNPERFORATED, a. *ŭn-pėr'fō-rā-tĕd:* not perforated; not penetrated by openings.

UNPERFORMED, a. *ŭn'pėr-fawrmd':* not performed; not done or executed; not fulfilled. **UN'PERFORM'ING**, a. not discharging its office.

UNPERJURED, a. *ŭn-pėr'jûrd:* free from perjury.

UNPERPLEXED, a. *ŭn'pėr-plĕkst':* not perplexed; not harassed; not complicated.

UNPERUSED, a. *ŭn'pė-rôzd':* not read.

UNPERVERTED, a. *ŭn'pėr-vėrt'ĕd:* not perverted; not wrested or turned to a wrong use or meaning.

UNPETRIFIED, a. *ŭn-pĕt'rĭ-fīd:* not petrified; not converted into stone.

UNPHILOSOPHIC, or UN'PHILOSOPH'ICAL, a. *ŭn'fĭl-ō-sŏf'ĭk* or *-ĭ-kăl:* not according to the rules or principles of sound philosophy. UNPHIL'OSOPH'ICALLY, ad. UN'PHILOS'OPHIZE, v. to reduce from the status of a philosopher or reasoning being.

UNPHYSICKED, a. *ŭn-fĭz'ĭkt:* not physicked; without the aid of medicine.

UNPIERCED, a. *ŭn-pĕrst':* not pierced or penetrated.

UNPILLARED, a. *ŭn-pĭl'lĕrd:* deprived of pillars; without pillars.

UNPILLOWED, a. *ŭn-pĭl'lōd:* having no pillow; unsupported by a pillow.

UNPIN, v. *ŭn-pĭn':* to loose from pins; to unfasten.

UNPINKED, a *ŭn-pĭngkt':* in *OE.*, not marked with eyelet-holes; not pierced, as with a bodkin, sword, or the like.

UNPITIED, a. *ŭn-pĭt'ĭd:* not pitied; not compassionated; not regarded with sympathetic sorrow. UNPIT'IFUL, a. not pitiful; having no pity; not merciful. UNPIT'IFULLY, ad. UNPIT'YING, a. showing no compassion. UNPIT'EOUSLY, ad. without pity; mercilessly.

UNPLACED, a *ŭn-plāst':* not yet placed or located; not having a place, position, or office; disordered; uninvested.

UNPLAGUED, a. *ŭn-plāgd':* not tormented or harassed; not teased.

UNPLANTED, *ŭn-plănt'ĕd:* not planted; of spontaneous growth; not cultivated.

UNPLAUSIBLE, a. *ŭn-plawz'ĭ-bl:* not plausible; not having a fair appearance. UNPLAUS'IVE, a. *-ĭv,* in *OE.*, not applauding; disapproving.

UNPLEASANT, a. *ŭn-plĕz'ănt:* not pleasant; that does not afford pleasure; disagreeable. UNPLEAS'ANTLY, ad. UNPLEAS'ANTNESS, n. the state or quality of being unpleasant; an unpleasant circumstance or event; slight misunderstanding or quarrel. UNPLEAS'ING, a. offensive. UNPLEASED, a. *ŭn-plēzd',* not pleased; not delighted. UNPLEAS'ING, a. not pleasing; offensive.

UNPLEDGED, a. *ŭn-plĕjd':* not pledged; not engaged by promise; not mortgaged.

UNPLIABLE, a. *ŭn-plī'ă-bl,* or UNPLI'ANT, a.: not pliant; not easily bent; stiff; stubborn; not readily yielding.

UNPLIGHTED, a. *ŭn-plīt'ĕd:* not plighted or pledged.

UNPLOWED, or UNPLOUGHED, a. *ŭn-plowd':* not plowed.

UNPOETIC, a. *ŭn'pō-ĕt'ĭk,* or UN'POET'ICAL, a.: not poetical; destitute of the beauties of poetry; prosaic; unbecoming a poet. UN'POET'ICALLY, ad.

UNPOINTED, a. *ŭn-poynt'ĕd:* having no marks of punctuation; without point or purpose; dull; having no vowel-marks, as in Hebrew; having the points or tagged laces (of a garment) unfastened.

UNPOLARIZED, a. *ŭn-pō'lėr-īzd:* lacking the property of pointing to the poles of the earth.

UNPOLICIED, a. *ŭn-pŏl'ĭ-sĭd:* without a policy or rational design; irrational.

UNPOLISHED, a. *ŭn-pŏl'ĭsht:* not polished; not refined in manners; rude; rough.

UNPOLITE, a. *ŭn'pō-līt':* not refined in manners; not civil or courteous; rude. **Un'polite'ly**, ad. in an uncivil or rude manner. **Un'polite'ness**, n. want of refinement in manners; rudeness.

UNPOLLED, a. *ŭn-pōld':* not registered, as a vote at an election; not having voted; in *OE.*, unplundered.

UNPOLLUTED, a. *ŭn'pŏl-lô'tĕd:* not defiled or corrupted.

UNPOPULAR, a. *ŭn-pŏp'ū-lėr:* not having the public favor; not pleasing or in favor with the people. **Unpopularly**, ad. **Unpop'ular'ity**, n. *-lăr'ĭ-tĭ*, state of not pleasing the people.

UNPORTABLE, a. *ŭn-pōrt'ă-bl:* that cannot be carried.

UNPORTIONED, a. *ŭn-pōr'shŭnd:* without a marriage portion.

UNPOSSESSED, a. *ŭn'pŏz-zĕst':* not held; not occupied. **Un'possess'ing**, a. in *OE.*, having no possession.

UNPOTABLE, a. *ŭn-pō'tă-bl:* not drinkable.

UNPRACTICED, a. *ŭn-prăk'tĭst:* not skilled; without experience; raw.

UNPRECEDENTED, a. *ŭn-prĕs'ē-dĕnt'ĕd:* having no precedent; not justified by the authority of a former example. **Unprec'edent'edly**, ad.

UNPRECISE, a. *ŭn'prē-sīs':* not precise; not exact.

UNPREDICT, v. *ŭn'prē-dĭkt':* in *OE.*, to recall or nullify a prediction.

UNPREGNANT, a. *ŭn-prĕg'nănt:* not pregnant; not prolific, as in new or striking thoughts; not quick of wit.

UNPREJUDICED, a. *ŭn-prĕj'ū-dĭst:* not prejudiced; free from bias or prepossession; impartial; not preoccupied by opinion.

UNPRELATICAL, a. *ŭn'prē-lăt'ĭ-kăl:* unbecoming a prelate.

UNPREMEDITATED, a. *ŭn'prē-mĕd'ĭ-tā-tĕd:* not previously prepared in the mind; not done by design; not previously intended.

UNPREPARED, a. *ŭn'prē-pārd':* not prepared; not ready; not fitted or furnished by previous measures. **Un'prepar'edness**, n. state of being unprepared.

UNPREPOSSESSED, a. *ŭn-prē'pŏz-zĕst':* not biased by previous opinions; not partial. **Unpre'possess'ing**, a. not having a winning or attractive appearance.

UNPRESENTABLE, a. *ŭn'prē-zĕnt'ă-bl:* not presentable; not fit to be presented or introduced to another, or into society.

UNPRESSED, a. *ŭn-prĕst':* not pressed; not forced.

UNPRESUMING, a. *ŭn'prĕ-sūm'ĭng:* not too confident or bold; modest; retiring.

UNPRESUMPTUOUS, a. *ŭn'prĕ-sŭm'tū-ŭs:* not presumptuous or rash; modest; submissive.

UNPRETENDING, a. *ŭn'prĕ-tĕnd'ĭng:* not claiming distinction; modest.

UNPREVAILING, a. *ŭn'prĕ-vāl'ĭng:* of no force; useless.

UNPREVENTABLE, a. *ŭn'prĕ-vĕnt'ă-bl:* not preventable. **Un'prevent'ed**, a. not hindered; in *OE.*, not preceded by anything.

UNPRIESTLY, a. *ŭn-prēst'lĭ:* unsuitable to, or unbecoming, a priest.

UNPRINCELY, a. *ŭn-prĭns'lĭ:* unbecoming a prince.

UNPRINCIPLED, a. *ŭn-prĭn'sĭ-pld:* having no settled principles; destitute of virtue; vicious; wicked.

UNPRINTED, a. *ŭn-prĭnt'ĕd:* not printed, as a literary work; not stamped, as cotton goods.

UNPRIVILEGED, a. *ŭn-prĭv'ĭ-lĕjd:* not privileged.

UNPRIZED, a. *ŭn-prīzd':* not valued; in *OE.*, priceless. **Unpriz'able**, a. *-ă-bl*, in *OE.*, incapable of being prized; not of much value; also, invaluable.

UNPROCLAIMED, a. *ŭn'prō-klāmd':* not proclaimed.

UNPROCURABLE, a. *ŭn'prō-kūr'ă-bl:* not obtainable.

UNPRODUCTIVE, a. *ŭn'prō-dŭk'tĭv:* barren; not producing profit or interest, as money, labor, etc.; ineffective. **Un'produc'tively**, ad. **Un'produc'tiveness**, n. state of being unproductive.

UNPROFANED, a. *ŭn'prō-fānd':* not profaned; not violated.

UNPROFESSIONAL, a. *ŭn'prō-fĕsh'ŭn-ăl:* not belonging to a profession; not in keeping with the rules or usage of a profession. **Un'profes'sionally**, ad.

UNPROFITABLE, a. *ŭn-prŏf'ĭt-ă-bl:* producing no improvement or advantage; useless; resulting in no profit, advantage or gain; serving no purpose. **Unprof'itably**, ad. **Unprof'itableness**, n. state of producing no gain or advantage; uselessness. **Unprof'ited**, a. *-ĭ-tĕd*, having no gain.

UNPROGRESSIVE, a. *ŭn'prō-grĕs'sĭv:* not progressive.

UNPROHIBITED, a. *ŭn'prō-hĭb'ĭ-tĕd:* not forbidden; hence, lawful.

UNPROJECTED, a. *ŭn'prō-jĕkt'ĕd:* not planned; not formed in the mind.

UNPROLIFIC, a. *ŭn'prō-lĭf'ĭk:* barren; not producing fruit.

UNPROMISING, a. *ŭn-prŏm'ĭs-ĭng:* not affording a favorable prospect of success.

UNPROMPTED, a. *ŭn-prŏmt'ĕd:* not prompted; not dictated or instigated.

UNPRONOUNCEABLE, a. *ŭn'prō-nowns'ă-bl:* that cannot be pronounced; unspeakable. UN'PRONOUNCED', a. not uttered by the mouth.

UNPROPER, a. *ŭn-prŏp'ėr:* improper. UNPROP'ERLY, ad. *-lĭ*, improperly.

UNPROPHETIC, a. *ŭn'prō-fĕt'ĭk:* not prophetic; lacking the faculty of foreseeing future events; also UN'PROPHET'ICAL, a. *-ĭ-kăl.*

UNPROPITIATED, a. *ŭn'prō-pĭsh'ĭ-ā-tĕd:* not propitiated; not conciliated; not reconciled. UN'PROPI'TIOUS, a. not propitious; not favorable; not disposed to promote. UN'PROPI'TIOUSLY, ad. UN'PROPI'TIOUSNESS, n. the state of being unpropitious.

UNPROPORTIONED, *ŭn'prō-pōr'shŭnd:* not proportioned; disproportionate.

UNPROPPED, a. *ŭn-prŏpt:* not propped or supported; not upheld.

UNPROSPEROUS, a. *ŭn-prŏs'pėr-ŭs:* not prosperous; not attended with success; unfortunate. UNPROS'PEROUSLY, ad.

UNPROTECTED, a. *ŭn'prō-tĕkt'ĕd:* not protected; not supported or defended; not shielded or covered from danger. UN'PROTECT'ING, a. not shielding from danger.

UNPROTRACTED, a. *ŭn'prō-trăkt'ĕd:* not protracted.

UNPROVED, a. *ŭn-prôvd':* not proved; not established as true; not tried. UNPROVABLE, a. not capable of proof or demonstration.

UNPROVIDED, a. *ŭn'prō-vīd'ĕd:* not provided; unfurnished; unsupplied. UN'PROVIDE', v. *-vīd'*, in *OE.*, to divest or deprive of resolution; to unfurnish.

UNPROVOKED, a. *ŭn'prō-vōkt':* not provoked; not proceeding from a just cause; not incited. UN'PROVOK'ING, a. giving no offense.

UNPRUNED, a. *ŭn-prônd':* not pruned; not cut; not lopped.

UNPUBLISHED, a. *ŭn-pŭb'lĭsht:* not published, as a book; not made public; not given to the public; private.

UNPUNCTUAL, a. *ŭn-pŭngk'tū-ăl:* not punctual.

UNPUNISHED, a. *ŭn-pŭn'ĭsht:* suffered to pass without punishment, or with impunity.

UNPURCHASABLE, a. *ŭn-pėr'chās-ă-bl:* that cannot be purchased. UNPUR'CHASED, a. not bought.

UNPURGED, a. *ŭn-pėrjd:* not purified; not purged.

UNPURIFIED, a. *ŭn-pū'rĭ-fīd:* not purified; not freed from foul matter; unsanctified.

UNPURPOSED, a. *ŭn-pėr'pŭst:* not designed; not intentional.

UNPURSUED, a. *ŭn'pėr-sūd':* not followed; not prosecuted.

UNQUALIFIED, a. *ŭn-kwŏl'ĭ-fīd:* not qualified; destitute of the requisite talents or accomplishments; not having taken the requisite oaths or provided the required bond or security; not modified by conditions or exceptions. **Unqualify**, v. to disqualify.

UNQUALITIED, a. *ŭn-kwŏl'ĭ-tĭd:* in *OE.*, deprived of the usual qualities or faculties.

UNQUEEN, v. *ŭn-kwēn':* to divest of the dignity of queen.

UNQUELLED, a. *ŭn-kwĕld':* not subdued.

UNQUENCHABLE, a. *ŭn-kwĕnsh'ă-bl:* that will never be, or cannot be, extinguished. **Unquench'ableness**, n. **Unquench'ably**, ad. **Unquenched'**, a. *-kwĕnsht*, not extinguished.

UNQUESTIONABLE, a. *ŭn-kwĕst'yŭn-ă-bl:* not to be doubted; certain; in *OE.*, impatient under questioning: averse to being questioned or spoken to. **Unquest'ionably**, ad. without doubt. **Unquest'ioned**, a. not doubted; not examined; indisputable. **Unquest'ioning**, a. not doubting; trusting without reserve.

UNQUIET, a. *ŭn-kwī'ĕt:* not calm or tranquil; restless; troublesome. **Unqui'etly**, ad. **Unqui'etness**, n. restlessness; want of peace; perturbation; uneasiness.

UNQUOTED, a. *ŭn-kwōt'ĕd:* not quoted; applied to commodities not in the prices current or sale-lists; not dealt in or recognized by the stock exchange, as certain kinds of shares or stocks.

UNRACKED, a. *ŭn-răkt':* not freed from the lees.

UNRAKED, a. *ŭn-rākt':* not raked; not raked up or together.

UNRANSACKED, a. *ŭn-răn'săkt:* not ransacked; not searched; in *OE.*, not pillaged.

UNRANSOMED, a. *ŭn-răn'sŭmd:* not ransomed; not liberated from captivity by a price paid.

UNRAVAGED, a. *ŭn-răv'ājd:* not wasted or destroyed.

UNRAVEL, v. *ŭn-răv'l:* to disentangle; to clear from complication or difficulty; to separate connected parts; to unfold; to fray. **Unrav'elling**, imp. unfolding; clearing from difficulty. **Unrav'elled**, pp. disentangled.

UNREACHED, a. *ŭn-rēcht':* not reached or attained to.

UNREAD, a. *ŭn-rĕd':* not read; not recited; not perused; not learned in books; illiterate; applied to a proof not examined by the reader or corrector of a printing-office. **Unread'able**, a. *-rēd'ă-bl*, that cannot be read; not legible; not fit for, or worthy of, perusal.

UNREADY, a. *ŭn-rĕd'ĭ:* not ready; not prompt; not prepared; in *OE.*, unfit; ungainly; undressed. **Unread'ily**, ad. not promptly; not cheerfully. **Unread'iness**, n. want of readiness; want of preparation.

UNREAL, a. *ŭn-rē'ăl:* not real; not substantial; having appearance only. **Un'real'ity**, n. want of real existence; that which is unreal or unsubstantial. **Unre'alized**, a. not accomplished; not carried out.

UNREAPED, a. *ŭn-rēpt':* not reaped.

UNREASONABLE, a. *ŭn-rē'zn-ă-bl:* exceeding the bounds of reason; immoderate; exorbitant; irrational. **Unrea'sonably**, ad. *-blĭ,* in a manner contrary to reason. **Unrea'sonableness**, n. state of being unreasonable; excess of demand, passion, and the like. **Unrea'soned**, a. not derived from reason. **Unrea'soning**, a. not exercising the faculty of reason; wanting reason. **Unrea'son**, n. want of reason.

UNREAVE, or **Unreeve**, v. *ŭn-rēv':* to remove from a block or tackle, as to *unreave* a rope; to unwind; to disentangle.

UNREBUKED, a. *ŭn'rĕ-būkt':* not reproved or checked. **Un'rebuk'able**, a. *-ă-bl,* incapable of being rebuked; blameless.

UNRECANTED, a. *ŭn'rĕ-kănt'ĕd:* not retracted.

UNRECEIVED, a. *ŭn'rĕ-sēvd':* not taken; not come into possession; not embraced, as opinions.

UNRECKONED, a. *ŭn-rĕk'nd:* not reckoned or enumerated.

UNRECLAIMED, a. *ŭn'rĕ-klāmd':* not reclaimed; not tamed; not reformed; not recovered, as land from a wild state. **Un'reclaim'able**, a. not capable of being reclaimed; irreclaimable.

UNRECOGNIZABLE, a. *ŭn-rĕk'ŏg-nī'ză-bl:* that cannot be recognized; that cannot be acknowledged; that cannot be received as known. **Unrec'ognized**, a. not acknowledged or known.

UNRECOMMENDED, a. *ŭn-rĕk'ŏm-mĕnd'ĕd:* not recommended.

UNRECOMPENSED, a. *ŭn-rĕk'ŏm-pĕnst:* not rewarded or compensated.

UNRECONCILABLE, a. *ŭn-rĕk'ŏn-sīl'ă-bl:* not to be reconciled or harmonized; not capable of being appeased; implacable. **Unrec'onciled**, a. *-sīld,* not reconciled or harmonized; not appeased; not having become favorable; not having made peace with.

UNRECORDED, a. *ŭn'rĕ-kawrd'ĕd:* not recorded; not registered; not kept in remembrance by some writing or monument.

UNRECOUNTED, a. *ŭn'rĕ-kownt'ĕd:* not related or told.

UNRECOVERABLE, a. *ŭn'rĕ-kŭv'ĕr-ă-bl:* that cannot be recovered or regained. **Un'recov'ered**, a. not regained.

UNRECTIFIED, a. *ŭn-rĕk'tĭ-fīd:* not corrected. as an error; not refined, as spirits.

UNRECURING, a. *ŭn'rĕ-kūr'ĭng:* that cannot be cured; incurable.

UNREDEEMABLE, a. *ŭn'rĕ-dēm'ă-bl.* that cannot be redeemed; that cannot be purchased back. **Un'redeemed'**, a. not redeemed; not ransomed; not paid; not neutralized or counterbalanced.

UNREDRESSED, a. *ŭn'rĕ-drĕst':* not redressed.

UNREDUCED, a. *ŭn'rĕ-dūst':* not reduced: not lessened in size or amount. **Un'redu'cible**, a. that cannot be reduced or lessened in amount.

UNREEVE: see **Unreave**.

UNREFINED, a. *ŭn'rĕ-fīnd':* not refined, clarified, or freed from impurities; not polished in manners.

UNREFLECTING, a. *ŭn'rĕ-flĕkt'ĭng:* not reflecting; wanting in thought; inconsiderate.

UNREFORMED, a. *ŭn'rĕ-fawrmd':* not reformed; not reclaimed from vice; not amended; not corrected.

UNREFRACTED, a. *ŭn'rĕ-frăkt'ĕd:* not turned from a direct course, as rays of light.

UNREFRESHED, a. *ŭn'rĕ-frĕsht':* not refreshed; not relieved from fatigue; not cheered. **Un'refresh'ing**, a. not relieving from fatigue or weariness; not invigorating.

UNREFUTED, a. *ŭn'rĕ-fū'tĕd:* not refuted or proved to be false or wrong.

UNREGARDED, a. *ŭn'rĕ-gârd'ĕd:* not noticed; not heeded; neglected.

UNREGENERACY, a. *ŭn'rĕ-jĕn'ėr-ă-sĭ:* state of being unrenewed in heart. **Un'regen'erate**, a., or **Un'regen'erated**, a. not renewed in heart; remaining at enmity with God.

UNREGISTERED, a. *ŭn-rĕj'ĭs-tėrd:* not registered; not recorded.

UNREGRETTED, a. *ŭn'rĕ-grĕt'tĕd:* not lamented.

UNREGULATED, a. *ŭn-rĕg'ū-lā-tĕd:* not regulated; not reduced to order.

UNREHEARSED, a. *ŭn'rĕ-hėrst':* not recited or repeated.

UNREINED, a. *ŭn-rānd':* not restrained by the bridle; not held in check.

UNRELATED, a. *ŭn'rĕ-lā'tĕd:* not related; not connected by blood or affinity.

UNRELAXING, a. *ŭn'rĕ-lăks'ĭng:* not abating in attention or severity.

UNRELENTING, a. *ŭn'rĕ-lĕnt'ĭng:* pitiless; inexorable; hard; cruel; inflexibly rigid. **Un'relent'ingly**, ad.

UNRELIEVED, a. *ŭn'rĕ-lēvd':* not relieved, as soldiers on guard; not eased or delivered from pain; not delivered from distress. **Un'reliev'able**, a. incapable of being relieved; admitting no succor.

UNREMARKED, a. *ŭn'rĕ-mârkt':* unobserved. **Unremark'able**, not worthy of remark or notice.

UNREMEDIED, a. *ŭn-rĕm'ĕ-dĭd:* not remedied; not cured; not repaired. **Unreme'diable**, a. *-rĕ-mē'dĭ-ă-bl,* irremediable; incapable of being remedied.

UNREMEMBERED, a. *ŭn'rĕ-mĕm'bėrd:* not retained in the mind.

UNREMITTED, a. *ŭn'rĕ-mĭt'tĕd:* not remitted; not forgiven; not relaxed; not abated. **UN'REMIT'TING**, a. not remitting; not abating; incessant; continued. **UN'REMIT'TINGLY**, ad.

UNREMOVABLE, a. *ŭn'rĕ-môv'ă-bl:* that cannot be displaced; fixed. **UN'REMOV'ABLY**, ad. *-blĭ*, in an unremovable manner. **UN'REMOVED'**, a. not taken away; not capable of being removed.

UNRENEWED, a. *ŭn'rĕ-nūd':* not made anew; not renovated; unregenerate.

UNREPAID, a. *ŭn'rĕ-pād':* not repaid; not compensated.

UNREPAIRED, a. *ŭn'rĕ-pārd':* not repaired or mended.

UNREPEALED, a. *ŭn'rĕ-pēld':* not repealed or abrogated; remaining in force; not revoked.

UNREPEATED, a. *ŭn'rĕ-pēt'ĕd:* not done or spoken again.

UNREPENTANT, a. *ŭn'rĕ-pĕnt'ănt*, or **UN'REPENT'ING**, a.: not feeling sorrow or regret; not contrite. **UN'REPENT'ED**, a. not sorrowed for or regretted. **UN'REPENT'ANCE**, n. *-pĕnt'ăns*, in *OE.*, impenitence.

UNREPINING, a. *ŭn'rĕ-pīn'ĭng:* not peevishly murmuring or complaining. **UN'REPIN'INGLY**, ad.

UNREPLENISHED, a. *ŭn'rĕ-plĕn'ĭsht:* not refilled or adequately supplied.

UNREPORTED, a. *ŭn'rĕ-pōrt'ĕd:* not reported, as a speech; not yet officially made known; not yet published.

UNREPRESENTED, a. *ŭn-rĕp'rĕ-zĕnt'ĕd:* not represented; having no one to act in one's stead.

UNREPRESSED, a. *ŭn'rĕ-prĕst':* not crushed; not subdued. **UN'REPRES'SIBLE**, a. that cannot be put down or restrained; irrepressible.

UNREPRIEVABLE, a. *ŭn'rĕ-prēv'ă-bl:* that cannot be respited from death. **UN'REPRIEVED'**, a. not respited.

UNREPROVABLE, a. *ŭn'rĕ-prôv'ă-bl:* that cannot be justly blamed or censured; blameless. **UN'REPROVED'**, a. not liable to reproof or blame; not censured.

UNREQUITED, a. *ŭn'rĕ-kwī'tĕd:* not requited; not recompensed.

UNRESENTED, a. *ŭn'rĕ-zĕnt'ĕd:* not resented; not regarded with anger.

UNRESERVED, a. *ŭn'rĕ-zėrvd':* not reserved; not limited; not withheld in part; open; frank; free; full; concealing or withholding nothing. **UN'RESERV'EDLY**, ad. without limitation; frankly; without concealment. **UN'RESERVE'**, n., or **UN'RESERV'EDNESS**, n. *-ĕd-nĕs*, frankness; openness.

UNRESIGNED, a. *ŭn'rĕ-zīnd':* not surrendered; not submissive.

UNRESISTED, a. *ŭn'rĕ-sĭst'ĕd:* not opposed; in *OE.*, that cannot be resisted; resistless. UN'RESIST'ING, a. not making resistance; submissive; humble. UN'RESIST'INGLY, ad.

UNRESOLVED, a. *ŭn'rĕ-sŏlvd':* not resolved; not determined; not cleared; not solved.

UNRESPECTED, a. *ŭn'rĕ-spĕkt'ĕd:* not honored or esteemed. UNRESPECT'ABLE, a. not respectable.

UNRESPITED, a. *ŭn-rĕs'pĭt-ĕd:* not respited; in *OE.*, admitting no pause or intermission.

UNREST, n. *ŭn-rĕst':* disquiet; want of tranquillity. UNREST'ING, a. not tranquil; always moving or tossing about.

UNRESTORED, a. *ŭn'rĕ-stōrd':* not given back; not restored, as a building; not replaced in a former position; not having recovered health.

UNRESTRAINED, a. *ŭn'rĕ-strānd':* not restrained; not checked or repressed. UN'RESTRAINT', n. freedom from control.

UNRESTRICTED, a. *ŭn'rĕ-strĭkt'ĕd:* not limited.

UNRETURNED, a. *ŭn'rĕ-tĕrnd':* not brought or sent back; not restored; not come back.

UNREVEALED, a. *ŭn'rĕ-vēld':* not revealed; not discovered; not disclosed.

UNREVENGED, a. *ŭn'rĕ-vĕnjd':* not revenged; not vindicated by just punishment. UN'REVENGE'FUL, a. not disposed to revenge.

UNREVERED, a. *ŭn'rĕ-vērd':* not regarded with veneration. UNREV'ERENCED, a. not reverenced.

UNREVEREND, a. *ŭn-rĕv'ĕr-ĕnd*, or UNREV'ERENT, a. *-ĕnt:* irreverent.

UNREVERSED, a. *ŭn'rĕ-vĕrst':* not reversed; not repealed; not annulled by a counter-decision.

UNREVIEWED, a. *ŭn'rĕ-vūd':* not considered; not reviewed.

UNREVISED, a. *ŭn'rĕ-vīzd':* not revised; not altered and amended.

UNREVIVED, a. *ŭn'rĕ-vīvd':* not revived; not recalled into life or force.

UNREVOKED, a. *ŭn'rĕ-vōkt':* not recalled or annulled.

UNREWARDED, a. *ŭn'rĕ-wawrd'ĕd:* not rewarded.

UNRIDDLE, v. *ŭn-rĭd'dl:* to solve or explain.

UNRIFLED, a. *ŭn-rī'fld:* not robbed or plundered; not grooved, as a gun.

UNRIG, v. *ŭn-rĭg':* to strip of rigging, as a ship. UNRIG'GING, imp. UNRIGGED', pp.

UNRIGHTEOUS, a. *ŭn-rīt'yŭs* or *-rī'chŭs:* not just; evil; wicked; contrary to the divine law; not right; dishonest. UNRIGHT'EOUSLY, ad. wickedly. UNRIGHT'EOUSNESS, n. a violation of the divine law; wickedness. UNRIGHTFUL, a. *ŭn-rīt'fûl*, not rightful; not just. UNRIGHT', a. not right; unjust; wicked.

UNRIP, v. *ŭn-rĭp':* to open seams; to separate or tear asunder, as clothes or sails; to rip.

UNRIPE, a. *ŭn-rīp':* not mature; not complete; not brought to a state of perfection; too early. **Unri'pened**, a. not matured. **Unripe'ness**, n. immaturity.

UNRIVALLED, a. *ŭn-rī'văld:* having no rival; having no equal; matchless.

UNRIVET, v. *ŭn-rĭv'ĕt:* to loose from rivets; to unfasten.

UNROBE, v. *ŭn-rōb':* to strip of a robe; to undress. **Unro'bing**, imp. **Unrobed'**, pp.

UNROLL, v. *ŭn-rōl':* to undo or open out that which has been rolled; to display. **Unroll'ing**, imp. **Unrolled'**, pp.

UNROMANTIC, a. *ŭn'rō-măn'tĭk:* not romantic; not wild and fanciful; of a grave, sober, or matter-of-fact temperament. **Un'roman'tically**, ad.

UNROOF, v. *ŭn-rôf':* to strip off the roof or covering of. **Unroof'ing**, imp. **Unroofed'**, pp.

UNROOSTED, a. *ŭn-rôst'ĕd:* driven from the roost.

UNROOT, v. *ŭn-rôt':* to tear up by the roots; to extirpate. **Unroot'ed**, pp. torn up by the roots.

UNROUGH, a. *ŭn-rŭf':* smooth; hence, without a beard.

UNROUNDED, a. *ŭn-rownd'ĕd:* not shaped or cut to a round.

UNROUTED, a. *ŭn-rowt'ĕd:* not thrown into disorder; not defeated.

UNRUFFLED, a. *ŭn-rŭf'fld:* calm; tranquil; not agitated; not disturbed.

UNRULED, a. *ŭn-rôld':* not governed; not directed by superior power. **Unru'ly**, a. disregarding restraint; disposed to violate laws; disorderly; ungovernable; refractory. **Unru'liness**, a. disregard of restraint; turbulence. **Unru'liment**, n. *-lĭ-mĕnt*, in *OE.*, turbulence.

UNRUMPLE, v. *ŭn-rŭm'pl:* to free from rumples; to open out.

UNSADDLE, v. *ŭn-săd'dl:* to take the saddle from. **Unsad'dled**, a. not having a saddle on.

UNSAFE, a. *ŭn-sāf':* not safe; not free from danger; exposed to harm or destruction. **Unsafe'ly**, ad. not without danger. **Unsafe'ness**, n. or **Unsafe'ty**, n. state of not being free from danger; insecurity.

UNSAID, a. *ŭn-sĕd':* not spoken or uttered.

UNSAINTLY, a. *ŭn-sānt'lĭ:* not like or becoming a saint.

UNSALABLE, a. *ŭn-sāl'ă-bl:* not salable; not in demand; not meeting a ready sale; unfit for sale; unmerchantable. **Unsal'ableness**, n. the state of being unsalable.

UNSALTED, a. *ŭn-sawlt'ĕd:* not pickled with salt; fresh.

UNSALUTED, a. *ŭn'să-lô'tĕd:* not saluted; not addressed with expressions of kind wishes; not greeted.

UNSANCTIFIED, a. *ŭn-săngk'tĭ-fīd:* unholy; not consecrated.

UNSANCTIONED, a. *ŭn-săngk'shŭnd:* not ratified; not approved; not authorized.

UNSANITARY, a. *ŭn-săn'ĭ-tĕr-ĭ:* not sanitary; tending to promote disease.

UNSATED, a. *ŭn-sā'tĕd:* not satisfied; not glutted.

UNSATISFACTORY, a. *ŭn-săt'ĭs-făk'tĕr-ĭ:* not giving satisfaction; causing discontent. Un'satisfac'torily, ad. Un'satisfac'toriness, n. the state or quality of being unsatisfactory. Unsat'isfi'able, a. that cannot be satisfied. Unsat'isfied, a. not satisfied; not gratified to the full; not content; not convinced; not paid. Unsat'isfying, a. not yielding full gratification; not giving content.

UNSAVORY, a. *ŭn-sā'vĕr-ĭ:* having a bad taste or smell; tasteless; unpleasing; disgusting; offensive. Unsa'vorily, ad. Unsa'voriness, n. the state of being unsavory; bad taste or smell.

UNSAY, v. *ŭn-sā':* to retract; to deny something formerly declared.

UNSCALABLE, a. *ŭn-skāl'ă-bl:* that cannot be scaled or climbed.

UNSCANNED, a. *ŭn-skănd':* not scanned; not examined with care; not measured.

UNSCARED, a. *ŭn-skārd':* not frightened away.

UNSCARRED, a. *ŭn-skârd':* not marked with scars or wounds.

UNSCATHED, a. *ŭn-skātht':* uninjured.

UNSCATTERED, a. *ŭn-skăt'tĕrd:* not scattered; not dispersed or thrown into confusion.

UNSCEPTRED, a. *ŭn-sĕp'tĕrd:* having no sceptre or royal authority; deprived of sovereign power.

UNSCHOLARLY, a. *ŭn-skŏl'ėr-lĭ:* not suitable to or becoming a scholar. Un'scholas'tic, a. not pertaining to schools; not pedantic. Unschooled', a. not taught; illiterate.

UNSCIENTIFIC, a. *ŭn-sī'ĕn-tĭf'ĭk:* not according to the principles of science; not versed in science. Unsci'entif'ically, ad.

UNSCORCHED, a. *ŭn-skŏrcht':* not injured by fire, as the skin.

UNSCOURED, a. *ŭn-skowrd':* not cleaned by rubbing.

UNSCRATCHED, a. *ŭn-skrăcht':* not scratched; not rubbed or torn on the surface; not cancelled or erased.

UNSCREENED, a. *ŭn-skrēnd':* not screened; not covered; not sheltered or protected; not sifted.

UNSCREW, v. *ŭn-skrô':* to loose from screws; to unfasten or detach by screwing the other way.

UNSCRIPTURAL, a. *ŭn-skrĭp'tū-răl:* not in harmony or accordance with the Scriptures; not warranted by the authority of God's Word. **Unscrip'turally**, ad.

UNSCRUPULOUS, a. *ŭn-skrô'pū-lŭs:* having no scruples; not particular as to means employed; not restrained by conscience. **Unscru'pulously**, ad. **Unscru'pulousness**, n. the state or quality of being unscrupulous.

UNSCULPTURED, a. *ŭn-skŭlp'tūrd:* not engraved; not cut in stone.

UNSEAL, v. *ŭn-sēl':* to break or remove the seal of; to open. **Unseal'ing**, imp. **Unsealed'**, pp.: **Adj.** opened by breaking the seal; having no seal; wanting ratification.

UNSEARCHABLE, a. *ŭn-sérch'ă-bl:* that cannot be explored or investigated. **Unsearch'ably**, ad. **Unsearch'ableness**, n. the state or quality of being beyond the power of man to explore. **Unsearched'**, a. not searched; not explored; not critically examined. **Unsearch'ing**, a. not penetrating.

UNSEARED, a. *ŭn-sērd':* not seared: not hardened.

UNSEASONABLE, a. *ŭn-sē'zn-ă-bl:* not in the proper season or time; not in keeping with the season; beyond the usual time; unfit; ill-timed; late. **Unsea'sonably**, ad. at the wrong time or season; inopportunely. **Unsea'sonableness**, n. the quality or state of being not in season. **Unsea'soned**, a. not accustomed; not kept till fit for use, as wood; not inured; not salted; without added condiment, relish, or seasoning; unformed; not qualified by use; in *OE.*, unseasonable.

UNSEAT, v. *ŭn-sēt':* to throw from one's seat, as in the saddle; to depose from a seat or representative position, as to *unseat* a member of parliament for bribery. **Unseat'ed** pp.: **Adj.** having no seat or bottom. **Unseat'ing**, imp. throwing or expelling from a seat.

UNSEAWORTHY, a. *ŭn-sē'wėr-thĭ:* not fit for a voyage, applied to a ship which in respect of its equipment, state of repair, the soundness of its timbers, the number and efficiency of its crew, etc., is unfit for encountering the ordinary perils of the sea. **Unsea'worthiness**, n. the state of being unseaworthy.

UNSECONDED, a. *ŭn-sĕk'ŭn-dĕd:* not supported by any one but the mover, as a proposition or motion; not aided; not backed; in *OE.*, not again exemplified.

UNSECRET, a. *ŭn-sē'krĕt:* not secret or close; not trusty.

UNSECTARIAN, a. *ŭn'sĕk-tā'rĭ-ăn:* not sectarian or denominational.

UNSECULAR, a. *ŭn-sĕk'ū-lėr:* not worldly. **Unsec'ularize**, v. to detach from the things of this world; to devote to sacred uses.

UNSECURED, a. *ŭn'sĕ-kūrd':* not secured.

UNSEDUCED, a. *ŭn'sĕ-dūst':* not seduced; not drawn to evil.

UNSEEMLY, a. *ŭn-sēm'lĭ:* not seemly or becoming; not decent: **Ad.** in an unbecoming manner; indecently. **Unseem'liness**, n. indecency; uncomeliness; impropriety.

UNSEEN, a. *ŭn-sēn':* not seen or observed; not discovered; invisible.

UNSELFISH, a. *ŭn-sĕlf'ĭsh:* not unduly attached to one's own interests. **Unself'ishly**, ad. **Unself'ishness**, n.

UNSENT, a. *ŭn-sĕnt':* not sent; not transmitted.

UNSEPARATED, a. *ŭn-sĕp'ă-rā-tĕd:* not detached or parted. **Unsep'arable**, a. *-ăr-ă-bl:* inseparable; that cannot be parted or divided.

UNSEPULCHRED, a. *ŭn-sĕp'ŭl-kĕrd:* having no grave; unburied.

UNSERVICEABLE, a. *ŭn-sĕr'vĭs-ă-bl:* not serviceable; useless. **Unser'viceableness**, n. uselessness.

UNSET, a. *ŭn-sĕt':* not placed; not planted; not sunk below the horizon.

UNSETTLE, v. *ŭn-sĕt'tl:* to unfix; to make uncertain or fluctuating; to disconcert; to disorder; to discompose; to become unsettled. **Unset'tled**, pp.: **Adj.** unfixed; unhinged; not determined; not arranged or adjusted; unsteady or wavering; fickle; having no fixed place of abode; turbid; not occupied by permanent inhabitants. **Unset'tling**, imp. **Unset'tledness**, n. the state of being unfixed or undetermined; uncertainty; want of fixity. **Unset'tlement**, n. unsettled state; irresolution.

UNSEVERED, a. *ŭn-sĕv'ĕrd:* not parted or divided.

UNSEX, v. *ŭn-sĕks':* to make otherwise than the sex commonly is; to deprive of qualities natural to the sex.

UNSHACKLE, v. *ŭn-shăk'l:* to unfetter; to undo or remove a shackle or shackles from; to set free. **Unshack'ling**, imp. **Unshack'led**, pp. loosed from shackles or restraint.

UNSHADED, a. *ŭn-shā'dĕd:* not shaded, as a rough sketch; not shaded or obscured by having the light intercepted; not clouded. **Unshad'owed**, a. *-shăd'ōd*, not darkened; not clouded.

UNSHAKEN, a. *ŭn-shā'kn:* not shaken; not agitated; not moved; not weakened in resolution; firm. **Unshaked**, pp. *ŭn-shākt'*, in *O.E.*, unshaken.

UNSHAMED, a. *ŭn-shāmd':* not shamed.

UNSHAPE, v. *ŭn-shāp':* to deprive of shape; to confound; to throw into confusion. **Unshapable**, a. *ŭn-shā'pă-bl*, that cannot be put into proper form. **Unshaped'**, a., or **Unsha'pen**, a. deformed; ugly. **Unshape'ly**, a. not well formed.

UNSHARED, a. *ŭn-shārd':* not shared.

UNSHAVED, a. *ŭn-shāvd':* not shaved.

UNSHEATHE, v. *ŭn-shēth':* to draw from the sheath or scabbard. **Unsheath'ing**, imp. **Unsheathed'**, pp.

UNSHED, a. *ŭn-shĕd':* not shed; not spilled, as blood.

UNSHED, a. *ŭn-shĕd':* not parted or divided, as the hair.

UNSHEETED, a. *ŭn-shēt'ĕd:* not covered with sheets or plates.

UNSHELTERED, a. *ŭn-shĕl'tėrd:* not sheltered; not defended from danger or annoyance; unscreened. **UNSHEL'TERING**, a. not protecting; not shielding from danger.

UNSHIELDED, a. *ŭn-shēld'ĕd:* not shielded or protected; exposed.

UNSHIFTING, a. *ŭn-shĭft'ĭng:* not shifting; not changing place.

UNSHIP, v. *ŭn-shĭp':* to remove from the place where it is settled or fixed, as to *unship* the tiller; also, to remove from a ship, as a cargo. **UNSHIPPED'**, pp. removed from its place in a ship.

UNSHOCKED, a. *ŭn-shŏkt':* not shocked; not disgusted.

UNSHOD, a. *ŭn-shŏd':* having no shoes.

UNSHORN, a. *ŭn-shōrn':* not sheared or clipped.

UNSHOT, a. *ŭn-shŏt':* not hit by shot; not discharged: V. to take the balls out of, as out of guns.

UNSHOUT, v. *ŭn-showt':* in *OE.*, to retract what is agreed to by a shout.

UNSHOWERED, a. *ŭn-show'ėrd:* not watered by showers of rain.

UNSHRINKING, a. *ŭn-shrĭngk'ĭng:* not shrinking; not withdrawing from danger or toil; not recoiling. **UNSHRINK'INGLY**, ad.

UNSHRIVEN, a. *ŭn-shrĭv'n:* not absolved, as by a confession of sins.

UNSHROUDED, a. *ŭn-shrowd'ĕd:* not shrouded; not covered; unveiled.

UNSHRUNK, a. *ŭn-shrŭngk':* not contracted; not sponged, as cloth.

UNSHUNNED, a. *ŭn-shŭnd':* not avoided. **UNSHUN'NABLE**, a. *-nă-bl,* that cannot be shunned; inevitable.

UNSHUT, a. *ŭn-shŭt':* open; unclosed.

UNSIFTED, a. *ŭn-sĭft'ĕd:* not sifted; not separated by a sieve; untried.

UNSIGHTLY, a. *ŭn-sīt'lĭ:* disagreeable to the eye; deformed. **UNSIGHT'LINESS**, n. the state of being unsightly; ugliness.

UNSILVERED, a. *ŭn-sĭl'vėrd:* not covered with silver or quicksilver.

UNSINEWED, a. *ŭn-sĭn'ūd:* deprived of strength or force.

UNSINGED, a. *ŭn-sĭnjd':* not singed; not scorched.

UNSINNING, a. *ŭn-sĭn'nĭng:* committing no sin; not tainted with sin.

UNSISTERLY, a. *ŭn-sĭs'tėr-lĭ:* not becoming a sister.

UNSIZED, a. *ŭn-sīzd':* not sized or stiffened.

UNSKILFUL, a. *ŭn-skĭl′fûl:* wanting the knowledge and dexterity which are acquired by experience; clumsy. **UNSKIL′FULLY**, ad. **UNSKIL′FULNESS**, n. want of dexterity and readiness in action or execution, which are acquired by experience. **UNSKILLED′**, a. destitute of practical knowledge. **UNSKILLED LABOR**, labor which involves no mental strain or skill.

UNSLACKENED, a. *ŭn-slăk′nd:* not slackened.

UNSLAKED, a. *ŭn-slākt′:* not quenched, as thirst; not saturated with water, as lime.

UNSLEEPING, a. *ŭn-slēp′ĭng:* ever wakeful and watchful.

UNSLING, v. *ŭn-slĭng′:* to unloose from slings or fastenings, as a swung cask.

UNSLIPPING, a. *ŭn-slĭp′pĭng:* not liable to slip; fast.

UNSMIRCHED, a. *ŭn-smėrcht′:* not polluted; not stained.

UNSMOKED, a. *ŭn-smōkt′:* not smoked; not dried in smoke; not used in smoking, as a pipe.

UNSMOOTH, a. *ŭn-smŏ́th′:* not even; rough; not level. **UNSMOOTHED′**, a. not made smooth or even.

UNSOCIABLE, a. *ŭn-sō-shă-bl:* lacking the qualities and manners which render one agreeable in society; lacking sociability; averse to or unfitted for society; reserved; not easy in conversation. **UNSO′CIABLY**, ad. not kindly; with reserve. **UNSO′CIABLENESS**, n., or **UNSO′CIABIL′ITY**, n. *-bĭl′ĭ-tĭ*, the state of being unsociable. **UNSO′CIAL**, a. not adapted by qualities and manners to be agreeable in society.

UNSOILED, a. *ŭn-soyld′:* not soiled; not stained; unpolluted; not tainted.

UNSOLD, a. *ŭn-sōld′:* not sold; not disposed of by sale.

UNSOLDIERLY, a. *ŭn-sōl′jėr-lĭ*, or **UNSOL′DIERLIKE**, a.: unbecoming a soldier.

UNSOLICITED, a. *ŭn′sō-lĭs′ĭ-tĕd:* not solicited; not requested; unasked. **UN′SOLIC′ITOUS**, a. not anxious; not very desirous.

UNSOLVED, a. *ŭn-sŏlvd′:* not solved; not explained. **UNSOL′VABLE**, a. *-vă-bl*, that cannot be solved; inexplicable.

UNSOPHISTICAL, a. *ŭn′sŏ-fĭs′tĭ-kăl:* not sophisticated; rustic; simple; ignorant. **UN′SOPHIS′TICATED**, a. genuine; pure; simple; not adulterated by admixture.

UNSORROWED, a. *ŭn-sŏr′rōd:* not lamented; not bewailed; with *for*, as a death *unsorrowed for*.

UNSORTED, a. *ŭn-sŏrt′ĕd:* not separated into kinds or classes; in *OE.*, ill chosen; ill arranged; unsuitable.

UNSOUGHT, a. *ŭn-sawt′:* not sought; not requested; not solicited; not explored.

UNSOULED, a. *ŭn-sōld′:* divested of soul or mind· without soul or honor

UNSOUND, a. *ŭn-sownd′:* not sound; defective; infirm; sickly; diseased; not orthodox; not solid; not real; not substantial; invalid; not fast under foot; not well established. **Unsound′ly**, ad. **Unsound′ness**, n. the state of being unsound or defective; corruptness; want of solidity; want of orthodoxy; weakness or sickliness of body. **Unsound′ed**, a. not sounded; unfathomed; unfathomable. **Unsound′able**, that cannot be fathomed.—Syn. of 'unsound': rotten; decayed; unorthodox; heterodox; dishonest; untrue; insincere; erroneous; wrong.

UNSOURED, a. *ŭn-sowrd′:* not made sour or morose.

UNSOWN, a. *ŭn-sōn′*, or **Unsowed′**, a.: not sown, as land; not propagated by seed being scattered.

UNSPARING, a. *ŭn-spār′ĭng:* profuse; liberal; no parsimonious; not merciful. **Unspar′ingly**, ad. in abundance; lavishly. **Unspared′**, a. *-spārd′*.

UNSPEAK, v. *ŭn-spēk′:* to retract; to unsay; to recant. **Unspeakable**, a. *ŭn-spēk′ă-bl*, that cannot be spoken or uttered; that cannot be expressed in words; unutterable. **Unspeak′ably**, ad. in a manner or degree that cannot be expressed; unutterably.

UNSPECIFIED, a. *ŭn-spĕs′ĭ-fīd:* not particularly mentioned.

UNSPECULATIVE, a. *ŭn-spĕk′ū-lā-tĭv:* not speculative; not given to forming theories; not apt to engage in trading ventures.

UNSPENT, a. *ŭn-spĕnt′:* not spent; not used or wasted; not exhausted; not deprived of its force, as an *unspent* ball.

UNSPHERE, v. *ŭn-sfēr′:* to remove from its orb.

UNSPIED, a. *ŭn-spīd′:* not seen; not discovered; not searched or explored.

UNSPILT, a. *ŭn-spĭlt′:* not spilled or shed.

UNSPIRITUAL, a. *ŭn-spĭr′ĭt-ū-ăl:* not spiritual; carnal. **Unspir′itualize**, v. *-īz*, to deprive of spirituality.

UNSPLIT, a. *ŭn-splĭt′:* not split; not riven or rent in length.

UNSPOILED, a. *ŭn-spoyld′:* not spoiled; not rendered useless; not corrupted; not plundered.

UNSPOKEN, a. *ŭn-spō′kn:* not spoken or uttered.

UNSPOTTED, a. *ŭn-spŏt′tĕd:* not spotted or stained; untainted with guilt; unblemished; immaculate; pure. **Unspot′tedness**, n. state of being free from stain or guilt.

UNSQUARED, a. *ŭn-skwārd′:* not formed with lines or right angles; undressed, as round or natural timber; not regular.

UNST, *ŭnst:* most n. of the Shetland Islands, lat. 60° 45′ n., 12 m. long, and 3¼ m. in average breadth; 36 sq. m. The coast is much broken, and the headlands are rocky, mural, and lofty. Valuable minerals abound, and chromate of iron is an article of commerce. The island contains numerous tumuli, a chain of Scandinavian dunes, and the ruins of more than 20 ancient chapels. Fishing and agriculture are chief employments. Pop. (1881) 2,173.

UNSTABLE, a. *ŭn-stā'bl:* not steady; inconstant; irresolute; wavering. Unsta'bleness, n. instability.

UNSTAID, a. *ŭn-stād':* not steady; volatile; mutable; unfixed. Unstaid'ness, n. *-nĕs*, volatile mind; uncertain motion.

UNSTAINED, a. *ŭn-stānd':* not dyed; not polluted; not dishonored.

UNSTAMPED, a. *ŭn-stămpt':* not stamped or impressed; not having a stamp, as a letter, deed, etc.

UNSTANCHED, a. *ŭn-stânsht':* not stanched; not stopped, as blood.

UNSTATE, v. *ŭn-stāt':* to divest of state or dignity.

UNSTATESMANLIKE, a. *ŭn-stāts'măn-līk:* not becoming a statesman.

UNSTATUTABLE, a. *ŭn-stăt'ū-tă-bl:* contrary to statute.

UNSTAUNCHED: same as Unstanched.

UNSTAYED, a. *ŭn-stād':* not stopped or retarded.

UNSTEADFAST, a. *ŭn-stĕd'făst:* not fixed; not firm; inconstant.

UNSTEADY, a. *ŭn-stĕd'ĭ:* not constant; irresolute. changeable; mutable; variable; addicted to some vice. Unstead'ied, a. not supported; not kept from shaking; Unstead'ily, ad. Unstead'iness, n. inconstancy; want of firmness; irresolution.

UNSTEEPED, a. *ŭn-stēpt':* not soaked.

UNSTIMULATED, a. *ŭn-stĭm'ū-lā-tĕd:* not stimulated; not excited to action or to more vigorous exertion.

UNSTINTED, a. *ŭn-stĭnt'ĕd:* not stinted; not restrained within certain limits.

UNSTIRRED, a. *ŭn-stérd':* not stirred; not agitated.

UNSTOOPING, a. *ŭn-stôp'ĭng:* not stooping; not bending; not yielding.

UNSTOP, v. *ŭn-stŏp':* to take out a stopper from; to free from being stopped; to open. Unstop'ping, imp. Unstopped', pp.: Adj. not meeting any resistance.

UNSTORED, a. *ŭn-stōrd':* not stored; not laid up for future use; not warehoused.

UNSTORMED, a. *ŭn-stawrmd':* not stormed; not taken by assault, as a fortified place.

UNSTRAINED, a. *ŭn-strānd':* not strained; easy; not forced; natural.

UNSTRAITENED, a. *ŭn-strāt'nd:* not straitened; not contracted.

UNSTRATIFIED, a. *ŭn-străt'ĭ-fīd:* in *geol.*, not stratified; not formed or arranged in layers or strata, but in amorphous masses.

UNSTRENGTHENED, a. *ŭn-strĕngth'nd:* not strengthened; not supported,

UNSTRING, v. *ŭn-strĭng':* to take strings from; to relax, as the strings of a musical instr.; to loosen, as the nerves; to take from a string, as beads; to untie. UNSTRINGED', pp.: ADJ. not having strings. UNSTRING'ING, imp. UNSTRUNG', pt. pp.

UNSTRUCK, a. *ŭn-strŭk':* not struck; not impressed; not affected.

UNSTUDIED, a. *ŭn-stŭd'ĭd:* not premeditated or prepared beforehand; easy; natural; ignorant through neglect of study. UNSTUDIOUS, a. *ŭn-stū'dĭ-ŭs*, not diligent in study.

UNSTUFFED, a. *ŭn-stŭft':* not stuffed.

UNSUBDUED, a. *ŭn'sŭb-dūd':* not brought into subjection; not conquered.

UNSUBMISSIVE, a. *ŭn'sŭb-mĭs'sĭv:* not yielding to the will or power of another; disobedient. UN'SUBMIS'SIVELY, ad.

UNSUBSCRIBED, a. *ŭn'sŭb-skrībd':* not subscribed; not attested or agreed to by writing one's name beneath.

UNSUBSTANTIAL, a. *ŭn'sŭb-stăn'shăl:* not solid; not real; slight; flimsy. UN'SUBSTAN'TIALLY, ad. UN'SUBSTAN'TIAL'ITY, n. *-shĭ-ăl'ĭ-tĭ*, quality of being unsubstantial, or of having no real existence. UN'SUBSTAN'TIATED, a. not established by proof; not verified.

UNSUCCESSFUL, a. *ŭn'sŭk-sĕs'fûl:* not successful; not accomplishing what was intended or expected; not fortunate. UN'SUCCESS'FULLY, ad. UN'SUCCESS'FULNESS, n. the state of being unsuccessful. UN'SUCCESS', n. want of success.

UNSUCKED, a. *ŭn-sŭkt':* not sucked.

UNSUFFERABLE, a. *ŭn-sŭf'fėr-ă-bl:* intolerable; insufferable.

UNSUITABLE, a. *ŭn-sūt'ă-bl:* unfit; not adapted; improper. UNSUIT'ABLY, ad. UNSUIT'ABLENESS, n. the state of being unsuitable. UNSUIT'ED, a. not suited; not adapted. UNSUIT'ING, a. not fitting; not becoming.

UNSULLIED, a. *ŭn-sŭl'lĭd:* not stained; not tarnished; not disgraced.

UNSUNG, a. *ŭn-sŭng':* not sung; not celebrated in verse.

UNSUNNED, a. *ŭn-sŭnd':* not exposed to the sun; not thawed by the sun.

UNSUPPLANTED, a. *ŭn'sŭp-plănt'ĕd:* not supplanted; not displaced or undermined; not overthrown by stratagem.

UNSUPPLIED, a. *ŭn'sŭp-plīd':* not supplied; not furnished with what is necessary.

UNSUPPORTABLE, a. *ŭn'sŭp-pōrt'ă-bl:* intolerable; such as cannot be endured; insupportable. UN'SUPPORT'ED, a. not upheld; not sustained; not seconded.

UNSUPPRESSED, a. *ŭn'sŭp-prĕst':* not suppressed; not subdued; not extinguished.

UNSURE, a. *ŭn-sūr′:* not sure; not fixed; not certain **Unsured′**, a. in *OE.*, not fixed or certain.

UNSURMOUNTABLE, a. *ŭn′sėr-mownt′ă-bl:* that cannot be overcome; insuperable; insurmountable.

UNSURPASSED, a. *ŭn′sēr-păst′:* not surpassed; not excelled; not exceeded.

UNSURRENDERED, a. *ŭn′sėr-rĕn′dėrd:* not surrendered.

UNSUSCEPTIBLE, a. *ŭn′sŭs-sĕp′tĭ-bl:* not susceptible.

UNSUSPECTED, a. *ŭn′sŭs-pĕkt′ĕd:* not suspected. **Un′suspect′ing**, a. unsuspicious; not imagining that any ill is designed. **Un′suspect′ingly**, ad. **Unsuspect′**, a. OE. for **Unsuspected**.

UNSUSPENDED, a. *ŭn′sŭs-pĕnd′ĕd:* not hung up; not suspended, intermitted, or delayed.

UNSUSPICIOUS, a. *ŭn′sŭs-pĭsh′ŭs:* not inclined to mistrust others; not imagining evil in others; not to be suspected, as evidence. **Un′suspi′ciously**, ad. not in such a way as to imagine evil in others; without suspicion. **Unsuspi′cion**, n. *-pĭsh′ŭn*, absence of suspicion.

UNSUSTAINABLE, a. *ŭn′sŭs-tān′ă-bl:* that cannot be maintained. **Un′sustained′**, a. not supported. **Un′sustain′ing**, a. not sustaining; not keeping from falling.

UNSWATHE, v. *ŭn-swāth′:* to free, as from the encircling folds of bandages.

UNSWAYED, a. *ŭn-swād′:* not swayed; not controlled or influenced; not biassed. **Unsway′able**, a. *-ă-bl*, that cannot be swayed or influenced; not to be governed.

UNSWEAR, v. *ŭn-swār′:* to retract or recant by an oath.

UNSWEET, a. *ŭn-swēt′:* not sweet; disagreeable.

UNSWEPT, a. *ŭn-swĕpt′:* not swept; not cleaned with a broom.

UNSWERVING, a. *ŭn-swėrv′ing:* not swerving or deviating from a direct course; constant. **Unswerv′ingly**, ad.

UNSWORN, a. *ŭn-swōrn′:* not bound by an oath; not having taken an oath.

UNSWUNG, a. *ŭn-swŭng′:* not suspended.

UNSYMMETRICAL, a. *ŭn′sĭm-mĕt′rĭ-kăl:* lacking symmetry or due proportion of parts.

UNSYSTEMATIC, a. *ŭn-sĭs′tĕm-ăt′ĭk*, or **Unsys′temat′ical**, a.: not systematic; without regular order or arrangement of parts.

UNTAINTED, a. *ŭn-tānt′ĕd:* not tainted or rendered impure by admixture of foul matter; not stained; unblemished. **Untaint′edly**, ad. **Untaint′edness**, n. the state of being untainted.

UNTAINTED, a. *ŭn-tānt′ĕd:* in *OE.*, not attainted.

UNTAKEN, a. *ŭn-tā′kn:* not taken; not captured or reduced; not subdued; not swallowed.

UNTAMABLE, a. *ŭn-tā'mă-bl:* not tamable; that cannot be reclaimed from a wild state. **Untamed'**, a. not reclaimed from wildness; not domesticated; not brought under control.

UNTANGLE, v. *ŭn-tăng'gl:* to loose from intricacy or a knotty condition; to disentangle.

UNTARNISHED, a. *ŭn-târ'nĭsht:* not soiled; not stained; unblemished.

UNTASTED, a. *ŭn-tāst'ĕd:* not tasted; not tried by the sense of taste or by the tongue; not experienced. **Untast'ing**, a. not tasting; not perceiving by the taste.

UNTAUGHT, a. *ŭn-tawt':* not taught; not instructed; unlettered; unskilled; ignorant.

UNTAXED, a. *ŭn-tăkst':* not charged with taxes; not accused.

UNTEACHABLE, a. *ŭn-tēch'ă-bl:* that cannot be taught or instructed. **Unteach'**, v. to cause to forget what has been taught; to cause to be forgotten.

UNTEMPERED, a. *ŭn-tĕm'pėrd:* not tempered; not duly mixed for use; rigorous.

UNTEMPTED, a. *ŭn-tĕm'tĕd:* not tempted; not tried by enticements or persuasions. **Untempt'ing**, a. not adapted to tempt or allure.

UNTENABLE, a. *ŭn-tĕn'ă-bl:* that cannot be held in possession; not defensible.

UNTENANTABLE, a. *ŭn-tĕn'ănt-ă-bl:* not in suitable repair for a tenant; not fit for habitation. **Unten'anted**, a. not occupied, as a house.

UNTENDED, a. *ŭn-tĕn'dĕd:* not tended; not attended to or cared for; not having an attendant.

UNTENDER, a. *ŭn-tĕn'dėr:* not soft; lacking in sensibility or affection.

UNTENDERED, a. *ŭn-tĕn'dėrd:* not offered.

UNTENT, v. *ŭn-tĕnt':* in *OE.*, to bring out of a tent; to deprive of the shelter of a tent. **Untented**, a. *ŭn-tĕnt'ĕd,* without the shelter of a tent; not covered with tents.

UNTENTED, a. *ŭn-tĕnt'ĕd* [see **Tent** 1]: having no lint or medical dressings applied.

UNTERRIFIED, a. *ŭn-tĕr'rĭ-fīd:* not affrighted or daunted.

UNTERWALDEN, *ôn-tėr-vâl'dėn:* one of the four Forest Cantons of Switzerland; part of the Hill Country which surrounds the Lake of Lucerne (see **Switzerland**); 25 m. in length. U. is bounded e., s., and w. by lofty hills, and subsidiary ridges divide it into two parallel valleys—both of which open on the north into the Lake of Lucerne. The e. valley is drained by the Engelberger Aa, the w. by the Sarner Aa. Great highways run up these valleys from the shores of the lake, connecting with each other; but not connecting U. with surrounding cantons. The canton is chiefly pastoral. Attempts to cultivate the vine have not been successful. The language of the people is a Swiss-

German dialect; their religion is Rom. Catholic. U. is divided into two parts; not, however, corresponding with the two river basins of which it is formed. The forest of Kerns, or Kernwald, formed the line of separation between these two districts as early as 1150. One is named the Obwald, or district above the Forest, and includes the whole w. valley. The other is the Nidwald, including only the lower part of the e. valley. Each division forms an independent republic, with its own administration. Both have a *landesgemeinde*, or parliament, composed of all the inhabitants 20 years of age, except a few *heimathlosen* (tramps); and each forms a half-canton, i.e., a canton which returns one member to the Swiss council of state. The landesgemeinde of each half-canton assembles in the open air late in the spring, when it passes new laws, pays off accounts, imposes taxes, and appoints the executory officers. —The cap. of the Nidwald is Stanz (pop. in 1888 of 2,458), remarkable for its fine church and statue of Winkelried. The cap. of the Obwald is Sarnen (pop. (1888) 3,928).—Pop. of U. (1888) 27,585.

UNTESTED, a. *ŭn-tĕst'ĕd:* not tested or proved; not tried by a standard.

UNTHANKED, a. *ŭn-thăngkt':* not thanked; not repaid with acknowledgments. UNTHANK'FUL, a. not making acknowledgments for favors received; ungrateful. UNTHANK'FULLY, ad. UNTHANK'FULNESS, n. neglect of acknowledgments for good received; ingratitude.

UNTHAWED, a. *ŭn-thawd':* not melted or dissolved.

UNTHEORETICAL, a. *ŭn-thē'ō-rĕt'ĭ-kăl:* not depending on theory or speculation.

UNTHINK, v. *ŭn-thĭngk':* to recall or dismiss in thought; dismiss from the mind. UNTHINKING, a. *ŭn-thĭngk'ing*, thoughtless; inconsiderate. UNTHINK'INGLY, ad. UNTHOUGHT'FUL, a. inconsiderate; heedless. UNTHOUGHT'-OF, a. not thought of; not regarded.

UNTHREAD, v. *ŭn-thrĕd':* to draw a thread from, as to *unthread* a needle; to loose; relax.

UNTHREATENED, a. *ŭn-thrĕt'nd:* not threatened or menaced.

UNTHRIFT, n. *ŭn'thrĭft:* lack of thrift; extravagance; prodigality; one who wastes his substance by extravagance: ADJ. *ŭn-thrĭft'*, in *OE.*, prodigal; profuse. UNTHRIFT'Y, a. prodigal; lavish; profuse; wasteful. UNTHRIFT'ILY, ad. UNTHRIFT'INESS, n. the state of being unthrifty.

UNTHRONE, v. *ŭn-thrōn':* to pull down from a throne; to dethrone.

UNTIDY, a. *ŭn-tī'dĭ:* not tidy; not neatly dressed; not in good order. UNTI'DILY, ad. UNTI'DINESS, n. the state of being untidy; want of order or neatness.

UNTIE, v. *ŭn-tī':* to undo, as a knot; to undo the fastenings or wrappings of; to free from a knot or any fastening; to unbind; to loosen; to disentangle. UNTIED', pp.: ADJ. not bound or gathered in a knot; not held by any fastening; set free from any bond.

UNTIL, prep. *ŭn-tĭl'* [OS. *und*, unto, and Ger. *ziel;* OHG. *zil;* Bohem. *cyl*, a bound, a limit, an end]: to; till; as far as, with respect to time, but in early English used also in respect of place: CONJ. as far as; to the point that; to the degree or time that.

UNTILLED, a. *ŭn-tĭld':* not tilled or cultivated.

UNTIMBERED, a. *ŭn-tĭm'bėrd:* not growing timber, as *untimbered* land; in *OE.*, not furnished with timber; weak.

UNTIMELY, a. *ŭn-tīm'lĭ:* not timely; inopportune; happening before the usual or natural time; premature: AD. before the natural or proper time. UNTIME'LINESS, n. the state of being untimely. UNTIME'OUS, a. *-ŭs*, untimely. UNTIME'OUSLY, ad.

UNTINCTURED, a. *ŭn-tĭngk'tūrd:* not impregnated with; not imbued with, as the mind.

UNTINGED, a. *ŭn-tĭnjd':* not tinged; not stained; not discolored; not infected.

UNTIRED, a. *ŭn-tīrd':* not tired; not exhausted; not made weary. UNTIR'ING, a. not becoming weary or fatigued. UNTIR'INGLY, ad. UNTIR'ABLE, a. *-ă-bl*, in *OE.*, incapable of being tired; unwearied.

UNTITLED, a. *ŭn-tī'tld:* having no title or claim; having no title of honor, dignity, or office; lacking title, as an *untitled* person.

UNTO, prep. *ŭn'tô* [OS. and Goth. *und*, unto, and Eng. *to*]: to: now used only in formal or scriptural language.

UNTOLD, a. *ŭn-tōld':* not told; not related; not revealed; not numbered, or that cannot be told or numbered.

UNTOUCHED, a. *ŭn-tŭcht':* not touched; not hit; not moved or affected; not meddled with.

UNTOWARD, a. *ŭn-tō'ėrd:* perverse; not easily guided or taught; troublesome; in *OE.*, awkward; ungraceful; in *prov. Eng.*, wild; fierce. UNTO'WARDLY, ad. in a froward or perverse manner: ADJ. perverse; awkward. UNTO'WARDNESS, n. perverseness; awkwardness.

UNTRACEABLE, a. *ŭn-trās'ă-bl:* that cannot be traced; that cannot be followed by footsteps or tracks. UNTRACED', a. not traced; not marked out or delineated; not marked by footsteps.

UNTRACKED, a. *ŭn-trăkt':* not tracked; not marked or followed by footsteps.

UNTRACTABLE, a. *ŭn-trăkt'ă-bl:* not tractable; not yielding to management; stubborn; rough; difficult. UNTRACT'ABLENESS, or UNTRACT'ABIL'ITY, n. *-bĭl'ĭ-tĭ*, the state or quality of being untractable; stubbornness.

UNTRAINED, a. *ŭn-trānd':* not trained; not disciplined; not skilful; not educated.

UNTRANSCRIBED, a. *ŭn'trăn-skrībd':* not copied; not written over again.

UNTRANSFERABLE, a. *ŭn'trăns-fėr'ă-bl:* that cannot be passed to another. UN'TRANSFERRED', a. not transferred; not conveyed or assigned to another.

UNTRANSLATABLE, a. *ŭn'trăns-lā'tă-bl:* not capable of being translated. UN'TRANSLA'TED, a. not translated.

UNTRANSMUTABLE, a. *ŭn'trăns-mū'tă-bl:* that cannot be transmuted or changed in nature or substance.

UNTRANSPORTED, a. *ŭn'trăns-pōrt'ĕd:* not transported; not conveyed from one place to another.

UNTRANSPOSED, a. *ŭn'trăns-pōzd':* not transposed; having the natural order.

UNTRAVELLED, a. *ŭn-trăv'ĕld:* not trodden by passengers; not having visited foreign countries.

UNTREAD, v. *ŭn-trĕd':* in *OE.*, to go back in the same steps; to tread back; retrace.

UNTREASURED, a. *ŭn-trĕzh'ŭrd:* not laid up; in *OE.*, deprived of treasure.

UNTRIED, a. *ŭn-trīd':* not attempted; not tested or proved; without experience; inexperienced; not having passed trial; not heard and determined in a court of law.

UNTRIMMED, a. *ŭn-trĭmd':* not trimmed; not pruned or dressed, as a bush.

UNTRITURATED, a. *ŭn-trĭt'ū-rā'tĕd:* not reduced to powder.

UNTROD, a. *ŭn-trŏd'*, or UNTRODDEN, a. *ŭn-trŏd'n:* not passed over by persons; not marked by the feet.

UNTROUBLED, a. *ŭn-trŭb'ld:* not troubled; not disturbed by care or business; not agitated; not foul or turbid; transparent. UNTROUB'LEDNESS, n. state of being untroubled; indifference.

UNTRUE, a. *ŭn-trô':* contrary to the fact; false; not faithful or true to another. UNTRU'LY, ad. falsely.

UNTRUSSED, a. *ŭn-trŭst':* not trussed; not tied up.

UNTRUSTWORTHY, a. *ŭn-trŭst'wėr-thĭ:* not deserving of confidence.

UNTRUSTY, a. *ŭn-trŭst'ĭ:* not trusty; not worthy of confidence; unfaithful. UNTRUST'INESS, n. the state of being untrusty. UNTRUST'ED, a. not confided in.

UNTRUTH, n. *ŭn-trôth':* falsity; a falsehood; something not in conformity to fact and reality; want of fidelity; treachery. UNTRUTH'FUL, a. not truthful; having the habit of uttering falsehoods; not speaking the truth. UNTRUTH'FULLY, ad.

UNTUNABLE, a. *ŭn-tū'nă-bl:* that cannot be tuned; not harmonious; not musical. UNTU'NABLY, ad. UNTUNE, v. *ŭn-tūn'*, to make incapable of harmony; to disorder. UNTUNED', a. made incapable of producing harmonious sounds; discordant.

UNTURNED, a. *ŭn-tėrnd':* not turned.

UNTUTORED, a. *ŭn-tū'tėrd:* uninstructed; untaught.

UNTWINE, v. *ŭn-twīn':* to unwind; to loose that which has been twined. UNTWINED'. a. untwisted; disentangled.

UNTWIST, v. *ŭn-twĭst′:* to separate that which has been twisted; to open; to disentangle; to untwine. UNTWIST′ING, imp. UNTWIST′ED, a. separated; opened.

UNURGED, a. *ŭn-ėrjd′:* not urged; not incited; not pressed with entreaty.

UNUSED, a. *ŭn-ūzd′:* not employed; not handled for some purpose; that has never been used; left over; not habituated or accustomed. UNUSE′FUL, a. unprofitable; useless. UNU′SUAL, a. not usual; not common. UNU′SUALLY, ad. UNU′SUALNESS, n. the state of being unusual or uncommon.

UNUTTERABLE, a. *ŭn-ŭt′ėr-ă-bl:* that cannot be expressed in words; that cannot be disclosed; unspeakable UNUT′TERABLY, ad.

UNVACATED, a. *ŭn-vā′kā-tĕd:* not made vacant.

UNVALUED, a. *ŭn-văl′ūd:* not valued; not appraised not prized; neglected; in *OE.*, inestimable; above price.

UNVANQUISHED, a. *ŭn-văn′kwĭsht:* not overcome; not conquered.

UNVARIED, a. *ŭn-vā′rĭd:* not varied; not altered or diversified.

UNVARIEGATED, a. *ŭn-vā′rĭ-ĕ-gā-tĕd:* not variegated; not diversified.

UNVARNISHED, a. *ŭn-vâr′nĭsht:* not varnished; not artificially colored or adorned; plain, as an *unvarnished* tale.

UNVARYING, a. *ŭn-vā′rĭ-ĭng:* that does not vary; not liable to change.

UNVEIL, v. *ŭn-vāl′:* to uncover; to disclose to view UNVEIL′ING, imp. UNVEILED′, pp.

UNVENERABLE, a. *ŭn-vĕn′ėr-ă-bl:* in *OE.*, not venerable or worthy of veneration or respect.

UNVENTILATED, a. *ŭn-vĕn′tĭ-lā-tĕd:* not ventilated not purified by a free current of air; not subjected to public discussion.

UNVERSED, a. *ŭn-vėrst′:* not skilled; unacquainted.

UNVEXED, a. *ŭn-vĕkst′:* untroubled; not annoyed or disturbed.

UNVINDICATED, a. *ŭn-vĭn′dĭ-kā-tĕd:* not vindicated.

UNVIOLATED, a. *ŭn-vī′ō-lā-tĕd:* not violated; not broken; not injured; not transgressed.

UNVIRTUOUS, a. *ŭn-vėr′tū-ŭs:* wanting virtue.

UNVISITED, a. *ŭn-vĭz′ĭ-tĕd:* not visited; not resorted to; not frequent.

UNVITIATED, a. *ŭn-vĭsh′ĭ-ā-tĕd:* not vitiated; not corrupted; not injured in its substance or qualities.

UNVITRIFIED, a. *ŭn-vĭt′rĭ-fīd:* not converted into glass.

UNVOICED, a. *ŭn-voyst′:* not spoken or pronounced.

UNVOUCHED, a. *ŭn-vowcht′:* not affirmed or fully tested.

UNVOWED, a. *ŭn-vowd′:* not vowed; not consecrated by promise.

UNVOYAGEABLE, a. *ŭn-voy′ăj-ă-bl:* in *OE.*, that cannot be navigated, crossed, travelled, or passed over.

UNWAKENED, a. *ŭn-wā′knd:* not wakened; not roused from sleep or stupidity.

UNWALLED, a. *ŭn-wawld′:* not surrounded or protected by a wall.

UNWARES, ad. *ŭn-wārz′* [see Aware and Wary]: unexpectedly; unawares.

UNWARILY, UNWARINESS: see under Unwary.

UNWARLIKE, a. *ŭn-wawr′līk:* not fit for war; not used to war; peace-loving.

UNWARMED, a. *ŭn-wawrmd′:* not warmed; not excited; not heated in a moderate degree.

UNWARNED, a. *ŭn-wawrnd′:* not cautioned; not previously admonished of danger.

UNWARP, v. *ŭn-wawrp′:* to reduce from the state of being warped. Unwarped′, a. not warped; not biased; impartial. Unwarp′ing, a. unyielding; undeviating.

UNWARRANTABLE, a. *ŭn-wŏr′rănt-ă-bl:* not justifiable; unjust; improper. Unwar′rantably, ad. in a manner that cannot be justified. Unwar′rantableness, n. the state of being unwarrantable. Unwar′ranted, a. not warranted; not authorized; not assured or certain; not guaranteed to be sound and perfect, or of a certain quality.

UNWARY, a. *ŭn-wā′rĭ:* not cautious; not vigilant against danger; in *OE.*, unforeseen; unexpected. Unwa′rily, ad. without vigilance or caution; heedlessly. Unwa′riness, n. want of caution; carelessness.

UNWASHED, a. *ŭn-wŏsht′*, or Unwash′en, a.: not washed or cleansed by water. The unwashed, or The great unwashed, the mob; the rabble.

UNWASTED, a. *ŭn-wāst′ĕd:* not lost by extravagance or negligence; not lost by preventable means. Unwast′ing, a. *-ĭng*, not growing less; not decaying.

UNWATCHED, a. *ŭn-wŏcht′:* not watched; not guarded. Unwatch′ful, a. not watchful; not vigilant. Unwatch′fulness, n. want of caution or vigilance.

UNWATERED, a. *ŭn-waw′tėrd:* not watered, as by a river; not covered or wet with water; dry.

UNWAVERING, a. *ŭn-wā′vėr-ĭng:* not unstable; not fluctuating; firm.

UNWEAKENED, a. *ŭn-wēk′nd:* not weakened; not enfeebled.

UNWEANED, a. *ŭn-wēnd′:* not weaned.

UNWEAPONED, a. *ŭn-wĕp′nd:* not furnished with weapons.

UNWEARIABLE, a. *ŭn-wĕr′ĭ-ă-bl:* that cannot be wearied or tired out. UNWEAR′IABLY, ad. UNWEAR′IED, a. not tired; not fatigued; that does not tire or sink under fatigue or exertion. UNWEAR′IEDLY, ad. UNWEAR′IEDNESS, n. state or quality of being unwearied. UNWEAR′Y, a. not tired.

UNWEAVE, v. *ŭn-wēv′:* to undo what has been woven.

UNWED, a. *ŭn-wĕd′*, or UNWED′DED, a.: unmarried; single.

UNWEDGEABLE, a. *ŭn-wĕj′ă-bl:* not easily split or cloven.

UNWEEDED, a. *ŭn-wēd′ĕd:* not cleared of weeds.

UNWEETING, a. *ŭn-wēt′ĭng* [AS. *un*, not; *witan*, to perceive, to know (see WIT)]: in *OE.*, unknowing; ignorant. UNWEET′INGLY, ad. OE. for UNWITTINGLY; ignorantly.

UNWEIGHED, a. *ŭn-wād′:* not weighed; not deliberately considered and examined: inconsiderate. UNWEIGH′ING, a. inconsiderate; thoughtless.

UNWELCOME, a. *ŭn-wĕl′kŭm:* not welcome; not well received; not pleasing. UNWEL′COMELY, ad. UNWEL′COMED, a. not willingly and gladly received.

UNWELL, a. *ŭn-wĕl′:* ailing; indisposed.

UNWEPT, a. *ŭn-wĕpt′:* not lamented; not mourned.

UNWHIPPED, a. *ŭn-hwĭpt′:* not corrected; not chastised.

UNWHOLESOME, a. *ŭn-hōl′sŭm:* not wholesome; unfavorable to health; injurious; corrupt: tainted. UNWHOLE′SOMENESS, n. state of being injurious to health.

UNWIELDY, a. *ŭn-wēld′ĭ:* moved with difficulty; bulky; ponderous. UNWIELD′ILY, ad. heavily; with difficulty. UNWIELD′INESS, n. difficulty of being moved.

UNWILLED, a. *ŭn-wĭld′:* not produced by the will; involuntary. UNWILL′ING, a. averse; reluctant; in *OE.*, unintentional; unwilled. UNWILL′INGLY, ad. UNWILL′INGNESS, n. disinclination; reluctance.

UNWIND, v. *ŭn-wīnd′:* to loose or separate what has been twisted or convolved; to untwist. UNWIND′ING, a. not turning round; not encircling. UNWOUND′, pp.

UNWIPED, a. *ŭn-wīpt′:* not wiped; not cleaned by rubbing.

UNWISE, a. *ŭn-wīz′:* not wise; lacking or not characterized by wisdom; not discreet and judicious. UNWIS′DOM, n. want of wisdom or discretion; foolishness; imprudence.

UNWISH, v. *ŭn-wĭsh′:* to undo by wishing; to wish that the thing which is should not be. UNWISHED, a. *ŭn-wĭsht′:* not sought; not desired.

UNWIST, a. *ŭn-wĭst′:* unthought of; not known.

UNWIT, v. *ŭn-wĭt′:* to deprive of understanding. UNWIT′TING, imp.: ADJ. ignorant; unaware; unconscious. UNWIT′TINGLY, ad. without knowledge or consciousness; ignorantly.

UNWITHERED, a. *ŭn-wĭth'ėrd:* not withered or faded. **Unwith'ering**, a. not liable to wither.

UNWITNESSED, a. *ŭn-wĭt'nĕst:* not witnessed; not observed or seen by witnesses; not attested by witnesses; wanting testimony.

UNWITTY, a. *ŭn-wĭt'tĭ:* destitute of wit. **Unwit'tily**, ad.

UNWOMANLY, a. *ŭn-wŭm'ăn-lĭ:* unbecoming a woman.

UNWONTED, a. *ŭn-wŭnt'ĕd:* unaccustomed; not made familiar by practice; unusual; uncommon. **Unwont'edly**, ad. **Unwont'edness**, n. uncommonness; rareness. **Unwont'**, a. OE. for **Unwonted**.

UNWOODED, a. *ŭn-wŭd'ĕd:* destitute of trees.

UNWOOED, a. *ŭn-wôd':* not wooed or courted.

UNWORKMANLIKE, a. *ŭn-wėrk'măn-līk:* unlike or unbecoming a workman; unskilful.

UNWORLDLY, a. *ŭn-wėrld'lĭ:* not worldly. **Unworld'liness**, n. the state of being unworldly.

UNWORN, a. *ŭn-wōrn':* not worn or impaired.

UNWORSHIPPED, a. *ŭn-wėr'shĭpt:* not worshipped or adored.

UNWORTHY, a. *ŭn-wėr'thĭ:* not worthy or deserving; destitute of merit; unbecoming; base; unmerited. **Unwor'thily**, ad. not worthily; without due regard to merit. **Unwor'thiness**, n. the state of being unworthy; want of merit.

UNWOUNDED, a. *ŭn-wônd'ĕd:* not wounded; not hurt; not injured.

UNWOVEN, a. *ŭn-wō'vn:* not woven.

UNWRAP, v. *ŭn-răp':* to open what is folded; unfold; undo the wrappings of.

UNWREATHE, v. *ŭn-rēth':* to untwist; to untwine.

UNWRENCHED, a. *ŭn-rĕnsht':* not wrenched; not strained or distorted.

UNWRINKLED, a. *ŭn-rĭng'kld:* not wrinkled; not shrunk into furrows and ridges.

UNWRITTEN, a. *ŭn-rĭt'tn:* not reduced to writing; verbal; blank. **Unwritten law**, the common law, or that law which has been established by usage—as opposed to the 'written' or 'statute law;' law which is based on custom or judicial decisions.

UNWROUGHT, a. *ŭn-rawt':* not wrought; not labored; not manufactured.

UNWRUNG, a. *ŭn-rŭng':* not pinched.

UNYIELDED, a. *ŭn-yēld'ĕd:* not yielded; not allowed; not given up; not conceded. **Unyield'ing**, a. unbending; unpliant; stiff; obstinate. **Unyield'ingly**, ad.

UNYOKE, v. *ŭn-yōk':* to loose from or free from a yoke; in *OE.*, to disjoin. **Unyok'ing**, imp. **Unyoked'**, pp.: **Adj.** freed from the yoke; not having worn the yoke; in *OE.*, unrestrained.

UNZEALOUS, a. *ŭn-zĕl'ŭs:* not zealous or enthusiastic.

UP, ad. *ŭp* [AS. *up*, *upp*, up: Dan. and Dut. *op;* Icel. and Sw. *upp;* Goth. *iup;* Ger. *auf*, up, over, on, upon]: in, toward, or to a high or more elevated place or position; aloft; on high; above the horizon; in a state of advance; in, to, or at a state or point of equal advance, as to catch *up* in a race, to keep *up* with the times; in progress, as, what's *up* now?; in a state of being raised or increased; in a state of climbing or ascending; in a state of insurrection; in a state of elevation; in a state of excitement; out of bed; into order, as, he drew *up* his company; from youth to age; at an end, as, it is all *up* with him now: *up* is much used in modifying the action of a verb: Prep. from a lower to a higher position on, as to climb *up* a tree; to or toward the source, head, or important part of, as to sail *up*-stream: Int. or Impera. arise; rouse up. **Up and down**, in a vertical position or direction; upright; backward and forward; from one place to another; here and there. **Up-by**, in *Scot.*, up to or at a place not far off. **Up line**, a line of railway leading to any principal terminus. **Up to**, to an equal height or degree; fully prepared for. **Up to the mark**, **Up to the knocker**, in *slang*, gratifying; satisfactory; excellent. **Up to snuff**, in *slang*, fully aware of the scent; alive to one's own interest; wide-awake. **Up to trap** (see under Trap 1). **Up-stream**, from the mouth toward its head; against the current; opposed to *down-stream*, with the current. **Up-train** (see under Train). **Up the country**, in a direction from the coast, or up a river. **The ups and downs of life**, the various changes of good and bad fortune, or the joys and sorrows of life. **Up with**, denoting the act of erecting, or raising to give a blow. **All up with**, all over with. **The time is up**, the allotted time is past. **To blow up**, to inflate; to destroy by mining or from below; to reprove sharply. **To come up with**, to reach in following. **To grow up**, to come to maturity. **Done up**, put in order; dressed for use; exhausted.

UPANISHAD, *ú-păn'ĭ-shăd*, mod. Hind. *ŭ-pŭn'ĭ-shŭd:* one of a series of speculative treatises belonging to the Vedic literature which contain the mystical doctrine of the Hindus on the nature of a supreme being, its relation to the human soul, and the process of creation (see India—*Religion*). The word (which is Sanskrit) is made up of *upa*, 'beneath,' or 'near,' and *ni*, 'in,' combined with the radical *sad*, 'sit,' and is explained by the great theologian *S'ankara* (q.v.), and others, as meaning the 'science of Brahman,' or 'the understanding of the identity of Brahman and the soul,' because 'in those devoted to it this science *sets to rest* (or destroys) the world, together with (ignorance) its cause;' or, in other words, because it shows to them that the world has, besides Brahman, no reality. Its etymology has had various explanations, among which that by the grammarian Pân'ini seems most probable—that its earliest sense was that of 'secret' or 'mystery' (literally, 'that which *sits* or rests *beneath*'). In this view these works derived their name from their mysterious doctrine and their mystical style.

The Upanishads are considered to have for their object the more clear discussion of the questions whose treatment had been begun in the Brâhman'a portion of the old Vedic hymns—questions as to the origin of the world and the true nature of the gods: see INDIA—*Religion*. Their object, like that of the Aran'yakas—whose obscure meaning they seek to make more clear—is to impress the mind with the belief in one supreme spirit (*Brahman*, as a neuter, and different, therefore, from the same word as a masculine, which is the name of the first god of the *Trimûrti*, q.v.); to show that this supreme spirit is the creator of the world; that the world has no reality if thought of besides Brahman; and that the human soul is identical in nature with that same spirit whence it emanates. The reward the Upanishads hold out to the believer in their doctrine is freedom from Transmigration (q.v.), and consequent eternal bliss. Thus the older Upanishads are the forerunners of the philosophical systems—whose aim also is theirs (see SANSKRIT LITERATURE). Ranging over different periods of Hindu religion, they differ from one another in manner and detail. Thus, in some, probably the earliest, legend and ritual blend with theosophical speculation; others are more philosophical; in others, the process of creation is treated in some harmony with the Vedânta (q.v.) or the Sânkhya (q.v.) philosophy; some emphasize the knowledge of Brahman as the only way to eternal bliss; while others, on the contrary, in conformity with the Yoga (q.v.) doctrine, assign à prominent place to the exterior means for union with the supreme spirit. The sectarian Upanishads, which identify this spirit with Vishn'u and S'iva, besides tending to reconcile the popular with the philosophical creed, have probably no claim to rank among Vedic writings.

Of the older Upanishads, a typical instance is furnished in the Chhândogya Upanishad of the Sâmaveda, the framework of which is legendary throughout, and its contents allegorical and mystical. In one of them, an allegorical passage remarkably coincides with the allegory in Plato's *Phædrus*. The *Talavakâra* or *Kena* Upanishad—one of the shortest and most philosophical—sets forth more clearly perhaps than any other, the doctrine that the true knowledge of the supreme spirit consists in the consciousness which man acquires of his *incapacity* to understand it, since the human mind cannot have a knowledge of what is infinite.

The Upanishads, though not supposed to have been revealed in the same manner as the Vedic hymns (see VEDA), are not assigned to human authorship, but deemed inspired writings (see S'RUTI). Some of them declare themselves direct revelations from the self-existent Brahma. As in the case of most ancient Sanskrit works, their date is utterly conjectural.—See Max Müller's *History of Ancient Sanskrit Literature* (Lond. 1860); John Muir's *Original Sanskrit Texts*, I.-IV. (Lond. 1858–63); ed. and transl. of several Upanishads by E. Roer, *Râjendra Lâla Mitra*, and E. B. Cowell, in *Bibliotheca Indica;* also Rajah Rammohun Roy's *Translation of several Principal Books*, *Passages, and Texts of the Veds* (Lond. 1882). The names of 149 Upanishads were compiled by M. Müller: see his translation of the Upanishads.

UPAPURÂN'A: see PURÂN'A.

UPAS, n. *ū'pas* [Javanese]: poison: specifically, a poison consisting of the milky juice of the *Antiaris toxicaria*, or Upas-tree (q.v.), used by the Malays to poison their arrows, mixed with black pepper and the juice of the galanga-root and ginger; also, the tree from which this poison is derived. The prepared upas or antjar poison is kept in closed tubes of bamboo, and is of the consistence of molasses. The flesh of animals killed by this poison may be eaten with safety; though the virulence of the poison is shown by its extremely rapid action. It is not known what the substance is which gives to the juice of the upas-tree its poisonous properties, but it appears to be an alkaloid.—A still more powerful poison than the upas antjar is the *Upas Tjettek*, or *Upas Tieute*, prepared from the root of the *Strychnos Tieute* (see STRYCHNOS): it abounds in strychnine.

UPAS-TREE, n. *ū'pas-trē* [from Javanese *upas*, poison, and English *tree*: in Malay, *puhn-upas*, the poison-tree—from *puhn*, tree: and *upas*, poison]: tree common in the forests of Java and adjoining islands; the *Antīāris toxicāria*. It attains a height of upward of 100 ft., and belongs to the nat. order ARTOCARPACEÆ (q.v.), the order to which the bread-fruit belongs. The leaves are lanceolate; the female flowers solitary, the male flowers congregated beneath them on the receptacle, which has a long stalk, and is of the shape of a watch-glass. The fruit is a kind of drupe, covered with fleshy scales. Though the fresh juice of this tree, when brought into contact with the skin,

Antjar (*Antiaris toxicaria*).

acts as a poison, the story of a poison-vale in Java, in which the exhalations of numerous poison-trees extinguish all animal life, and even all other vegetable life, is a mere fable. There is a narrow valley in Java where neither animal nor vegetable life can subsist; but this is owing to carbonic acid gas emitted from the ground, as in the *Grotto del Cane*, near Naples; and the upas-tree is as incapable of living there as any other. The upas-tree is found in forests, and does no harm to the other trees around it. The fibre of the bark of the upas-tree is sometimes made into cloth; but unless the fibre is thoroughly cleaned, garments made of it produce a painful itching.

UPBEAR, v. *ŭp-bār′:* to bear up; to raise aloft; to elevate; to support; to sustain aloft.

UPBLOW, v. *ŭp-blō′:* to blow up or puff out; to make tumid.

UPBRAID, v. *ŭp-brād′* [from *up*, and the root of *bray*, to bawl, yell: Prov. *braidir*, *braidar*, to cry: Port. *bradar*, to cry out, to yell]: to charge with something wrong or disgraceful; to reprove with severity; to chide; to reproach; to cast in the teeth: N. in *OE.*, reproach; reproof. **UPBRAID′ING**, imp.: N. the act of reproaching in severe terms; reproaches or accusations made against any one to his face. **UPBRAID′ED**, pp. **UPBRAID′INGLY**, ad. *-lĭ.*—SYN. of ‘upbraid, v.’: to censure; condemn; reproach; blame; reprove.

UPBRINGING, n. *ŭp′brĭng-ĭng:* rearing; training; education.

UPCAST, a. *ŭp′kăst:* cast up; thrown upward; directed upward, as the eyes: N. in *bowling*, a throw. **UPCAST**, or **UPCAST-SHAFT**, in *mining*, the shaft for carrying off foul or heated air.

UPCOILED, a. *ŭp-koyld′:* made into a coil.

UPDRAW, v. *ŭp-draw′:* to draw up.

UPGATHER, v. *ŭp-găth′ėr:* to draw together close; to contract.

UPGAZE, v. *ŭp-gāz′:* to look upward.

UPGROW, v. *ŭp-grŏ′:* to grow up or over. **UP′GROWTH**, n. *ŭp′grōth*, increase; growth; advancement.

UPHAM, *ŭp′am*, CHARLES WENTWORTH: author: 1802, May 4—1875, June 14; b. St. John, N. B. He was for a while apprentice to an apothecary in St. John, then went to Boston, entered Harvard, there graduated, and, after studying theology in the Divinity School, was pastor of the First Chh. (Unit.) at Salem, Mass., 1824–44, retiring then on account of a bronchial affection. He was mayor of Salem 1852; member of the Mass. legislature 1840, 1849, and 1859–60. He served in the Mass. constitutional convention 1853, and in congress 1853–55. He was editor of the *Christian Register* 1845–6, and contributed to magazines and reviews. He was author of *Letters on the Logos; Lectures on Witchcraft; Life of Sir Henry Vane; Prophecy; Memoir of Francis Peabody;* and of the last 3 vols. of the *Life of Timothy Pickering.*

UP'HAM, Thomas Cogswell, D.D., LL.D.: metaphysician: 1799, Jan. 30—1872, Apr. 2; b. Deerfield, N. H. He graduated at Dartmouth 1818, and at Andover Theol. Sem. 1821; was asst. prof. of Hebrew at Dartmouth 1821–2; pastor of a Congl. chh. in Rochester, N. H., 1823; prof. of mental and moral philosophy at Bowdoin 1824–67. He was author of many works on philosophy and on religious devotional life and experience; and translated several works of a similar character, as Jahn's *Biblical Archæology; Life*, etc., *of Mme. Guyon*. Among his own writings are: *Elements of Intellectual Philosophy; Treatise on the Will; Imperfect and Disordered Mental Action; Life of Faith; Treatise on Divine Union; Method of Prayer; Christ in the Soul.*

UPHEAVE, v. *ŭp-hēv':* to lift up from beneath; to rise or swell upward. Upheav'ing, imp. Upheaved', pp.: Adj. lifted or forced up from below by some elevating power. Upheav'al, n. a lifting up from below; in *geol.*, a lifting up of strata by some expansive or elevating power from below; a change in stratified rocks from an original horizontal position to one more or less inclined, produced by an expansive subterranean force, or other power, like the pushing forward of the crust itself, as in the case of the Appalachian Mountains (q.v.). In slight changes of level the continuity of the rock is unbroken; but frequently immense cracks are formed, into which igneous rocks penetrate, and form a backbone for the upraised mass, or dikes penetrating the strata. Upheavals may take place slowly, like the present gradual change in the Scandinavian coast, or may be more rapid when produced by some sudden earthquake. Sometimes the folding of the crust is such that rocks of an earlier age are superimposed on others of a later. See Synclinorium.

UPHELD, *ŭp-hĕld':* pt. and pp. of Uphold (q.v.).

UPHILL, a. *ŭp'hĭl:* steep, as a road; difficult or tedious, like the act of ascending a hill.

UPHOARD, v. *ŭp-hōrd':* to hoard up; to store away in a secret place; to store up; to treasure.

UPHOLD, v. *ŭp-hōld':* to lift on high; to elevate; to support or keep from falling; to maintain; to support; to sustain; to continue; to continue without failing; to keep from being lost. Uphold'ing, imp. Upheld', pt. and pp. sustained; kept from falling. Uphold'er, n. one who upholds; a defender; in *OE.*, an undertaker; an upholsterer.

UPHOLSTERER, n. *ŭp-hōl'stėr-ėr* [a corruption of *upholdster* or *upholder*, the original meaning being, one who furbishes up old goods]: one who furnishes houses with beds, curtains, and the like; one who covers and cushions sofas, chairs, etc. Uphol'stery, n. *-ĭ*, the trade of an upholsterer; that kind of house-furnishings supplied by an upholsterer; upholsterer's work. Uphol'ster, v. *-stėr*, to supply with house-furnishings; to provide with cushions, springs, coverings, etc., as to *upholster* chairs, sofas, etc. Uphol'stered, a. *-stėrd*, fitted with hangings and coverings of cloth, etc.

UPJOHN, *ŭp'jŏn*, RICHARD: architect: 1802, Jan. 22—1858, Aug. 16; b. Shaftesbury, England. He learned the trade of carpenter and cabinet-maker in England; settled in New Bedford, Mass., 1829, and removed to Boston 1833. He designed the entrances to Boston Common, and designed and built St. John's Chh., Bangor, Me.; and other churches. Called to New York 1839, he designed Trinity Chh. there, and thereafter built several churches in that city and Brooklyn. He was the architect also of the Trinity Building and Corn Exchange Bank, and executed designs for many private residences throughout the country.

UPLANDS, n. *ŭp'lăndz* [*up*, high, and *lands*]: ground elevated at intervals above the meadows and flats which lie on the banks of rivers, near the sea, or between hills; high ground. **UP'LAND**, a. pertaining to uplands; higher in situation. **UP'LANDER**, n. *-ėr*, one who resides on the uplands. **UP'LANDISH**, a. *-ish*, in *OE.*, dwelling on the higher grounds or on mountains; rustic; clownish.

UPLEAD, v. *ŭp-lēd':* to lead upward. **UPLED'**, pp. in *OE.*, led upward.

UPLIFT, v. *ŭp-lĭft':* to raise; to elevate; in *Scot.*, to take up before due, as wages: N. a heaving or lifting up. **UPLIFT'ING**, imp. **UPLIFT'ED**, pp.: ADJ. raised high; elevated.

UPLOCK, v. *ŭp-lŏk':* in *OE.*, to lock up.

UPMOST, a. *ŭp'mōst* [*up*, high, and *most*]: highest; topmost. **UPPERMOST** is now generally used for **UPMOST**.

UPOLU, *ó-pō-lő':* largest but one of the Samoan group of islands in the Pacific (see SAMOA); about 60 m. w. of Tutuila (q.v.), the third island in size; 550 sq. m. U. is mountainous, but well wooded and fertile, and has several rivers. The chief harbor is Apia (q.v.), a civilized-looking place, with many edifices on the European model. Many of the natives are giving attention to cultivation of cotton, and the cotton-seed grows wherever it is cast on the ground. Coffee also is cultivated. The principal article of export is cocoa-nut oil. U. affords a plentiful supply of fruits and vegetables, and is visited annually by Brit. and Amer. whalers. The island has been a mission station for many years, and many of the native inhabitants are Christians.—Pop. 19,000 (including 800 Europeans and Americans).

UPON, prep., sometimes used as an ad., *ŭp-ŏn'* [AS. *uppon*, *uppan*, upon—from *up*, *upp*, up; *on*, *an*, on]: resting on the top or surface of; not under: *upon* is in most uses strictly synonymous with *on*, whether denoting situation, as, *upon* the table; assumption, as, he took an office *upon* him; time when, as, *upon* the third day; basis or security, as, to lend money *upon* land; subsistence, as, to come *upon* the parish; engagement, as, to start *upon* an enterprise, etc.

UPPER, a. *ŭp'pėr* [comparative of *up*]: higher in place, rank, or dignity. **Up'pers**, n. plu. the upper leather of a boot or shoe. **Up'permost**, a. superl. *-mōst*, highest in place, rank, or power; predominant; most powerful. **Upper-hand**, n. superiority; advantage. **Upper house**, the higher of two houses, in bicameral legislation; in Great Britain, the house of peers. **Upper servant**, one of the higher servants where many are kept. **The upper story**, the head. **Upper ten thousand**, **Upper ten**, the highest classes of the community; the aristocracy. **Upper works**, in a *ship*, the parts above water when the ship is fully freighted for a voyage. **Up'pish**, a. *familiarly*, proud; stuck-up. **Up'pishness**, n. empty pride; arrogance.

UPRAISE, v. *ŭp-rāz':* to exalt; to raise up.

UPRIGHT, a. *ŭp'rīt* [*up*, high, and *right*]: erect; possessing rectitude; honest: N. something standing erect and perpendicular; a timber supporting a rafter or beam. **Upright'ly**, ad. in an upright manner; perpendicularly; honestly. **Upright'ness**, n. state of possessing honesty and integrity. **Upright'eously**, ad. in *OE.*, uprightly.

UPRISE, v. *ŭp-rīz':* in *poetry*, to get up from a recumbent position; to rise from below the horizon; to rise, as a hilly ascent: N. in *OE.*, appearance above the horizon. **Uprising**, n. *ŭp-rī'zing*, the act of rising from below the horizon, as the sun; the act of rising from a recumbent or sitting posture; a rebellion.

UPROAR, n. *ŭp'rōr* [Dut. *oproer*, a tumult, a sedition—from *op*, up; *roeren*, to stir: Dan. *röre;* Ger. *rühren;* AS. *hreran;* Icel. *hræra*, to move, to agitate: Ger. *aufruhr*, disturbance]: a violent disturbance and noise; bustle and clamor: V. in *OE.*, to disturb by tumult or violence. **Uproar'ious**, a. *-ĭ-ŭs*, accompanied with great noise and disturbance. **Uproar'iously**, ad. **Uproar'iousness**, n. *-nĕs*, tumultuousness.

UPROLL, v. *ŭp-rōl':* to roll up.

UPROOT, v. *ŭp-rôt'* [*up*, high, and *root*]: to tear up by the roots; to destroy utterly; eradicate. **Uproot'ed**, pp.

UPROUSE, v. *ŭp-rowz':* to awaken from sleep; to excite to action.

UPRUSH, v. *ŭp-rŭsh':* to rush or sweep upward.

UPSALA, *ŭp-sâ'lâ:* city of Sweden, on the Fyrisä, a navigable stream, 42 m. n.n.w. of Stockholm. The e. part stands on a wide and fertile plain; the w. part, containing the chief buildings, on high ground overlooking an apparently boundless plain to the n. and e. U. is the seat of an abp., the primate of Sweden. The great attraction is the cathedral, formerly a beautiful structure, of brick, in Gothic style, founded 1258, completed 1435; it is 380 ft. long by 140 wide, and 105 in height. It contains the tombs of Linnæus (q.v.), and of Gustavus Vasa and other Swedish kings. The Univ. of U.—chief institution of the kind in Sweden—founded 1477, has about 1,900 students, 30 professors, and 61 teachers. The library contains 250,000 vols. and 11,000 MSS., several of which are very valuable. The castle, where the residence of the governor is, was founded middle of 16th c. by Gustavus I., but not finished until a century later.—Pop. (1885) 23,000, including the students; (1890) 21,511.

Two m. n. of the town is Old Upsala, now a village, which during the heathen period was the seat of the Odin worship, with a splendid temple and sacred grove, which have now disappeared. Also, about 4 m. from U. are the famous Mora-stones, where in the middle ages the election and crowning of the Swedish kings took place.

UP-SAR-O'-CA, or **Absaro'ka** (Indians): see **Crows**.

UPSET, v. *ŭp-sĕt':* to overturn; to overset; to throw down from an erect position; to disturb; unsettle, as, the news *upset* me; in *OE.*, to set or place up. **Up'set**, n. an overturn; the act of disturbing or unsettling: **Adj.** settled; fixed. **Upset price**, the price stated beforehand as the starting price below which bids will not be received when a house, estate, ship, or the like is put up for sale by auction—the sum from which increased offers may begin.

UPSHOT, n. *ŭp'shŏt:* conclusion; end; final issue; outcome; result.

UPSIDE, n. *ŭp'sīd:* the upper side or part. **Up'sides**, ad. *-sīds*, in *familiar language*, in the phrase 'I shall be *upsides* with him,' meaning I shall get even with him; I shall have my revenge. **Upside-down**, ad. *ŭp'sīd-down'* [OE. *up-so-down*]: with the upper part down; in complete disorder and confusion; upsodown; topsy-turvy.

UPSPRING, v.: in *OE.*, to spring up: N. in *OE.*, a man suddenly raised; an upstart.

UP-STAIRS: see under **Stair**.

UPSTART, n. *ŭp'stârt:* one who has suddenly risen from a humble station to wealth and power, and uses them arrogantly: V. to spring up suddenly: **Adj.** suddenly raised to wealth and power.

UPSTAY, v. *ŭp-stā':* in *OE.*, to sustain; to support.

UPSWARM, v. *ŭp-swawrm':* to rise in a swarm or swarms.

UPTAKE, v. *ŭp-tāk':* in *OE.*, to take into the hands: N. *ŭp'tāk*, in *Scot.*, power or capacity to learn; understanding; comprehension.

UPTEAR, v. *ŭp-tār':* to tear up; to rend.

UPTHROW, n. *ŭp'thrō:* in *mining*, a sudden uplift of strata by a fault or dislocation; upheaval.

UPTON, *ŭp'ton*, **Emory**: soldier: 1839, Aug. 27—1881, Mar. 14; b. Batavia, N. Y. On graduating at West Point, 1861, he became 2d lieut. of artillery, and the same year 1st lieut. He was wounded at the first Bull Run battle; commanded a battery in the Va. Peninsular campaign and in the Md. campaign 1862; in Oct. became col. of a N. Y. vol. regt., and commanded a brigade in the 6th corps of the Potomac Army till the end of 1863. For conspicuous bravery he was promoted brig. gen. of vols. on the field 1864, May 12. He served in the siege of

Petersburg and in the defense of Washington 1864; was severely wounded while commanding an infantry division in the Shenandoah campaign; and commanded a cavalry division during the closing operations in Ga. and Ala. He was brevetted maj.gen. U. S. A. at the end of the war; became lieut.col. 25th infantry U. S. A. 1866; was commandant of cadets at West Point 1870–75; col. 4th artillery 1880. He wrote volumes on *Tactics* and on *The Armies of Asia and Europe:* see his *Life and Letters*, by Peter S. Michie (1885).

UPTRAIN, v. *ŭp-trān':* to train up; to educate

UPTURN, v. *ŭp-tėrn':* to turn up.

UPWARD, a. *ŭp'wėrd* [AS. *up*, up; *weard* or *weardes*, used in composition to express direction]: directed to a higher place; having an ascending direction: **Ad.** toward a higher place; toward the head or source; also **Up'wards**, *-wėrdz*, opposed to *downwards*.

UPWHIRL, v. *ŭp-hwėrl':* in *OE.*, to raise upward with quick rotation.

UPWIND, v. *ŭp-wīnd':* to wind or roll up; to convolve. **Upwound'**, pp.

URACHUS, n. *ū'ră-kŭs* [Gr. *ourachos*, the urinary canal of a fetus—from *ouron*, urine]: a cord composed mainly of fibrous tissue, but containing some smooth muscle and sometimes the remains of an epithelial-lined cavity, attached to the summit of the bladder and ascending to the umbilicus. It represents part of the allantois, a sac of the embryo, from which the bladder develops as a dilatation of the internal portion, while the original cavity disappears.

URÆMIA, n. *ū-rē'mĭ-ă* [Gr. *ouron*, urine; *haima*, blood]: in *med.*, poisoning of the blood in some disorders of the urinary organs. **Uræ'mic**, a. *-mĭk*, of or pert. to uræmia.

URAL, *ū'ral* or *ô-râl'* (formerly **Jaik** or **Yaik**, the *Rimna* of the ancients): name since 1775 of a river of Russia, rising in the s. section of the Ural Mts., near the e. frontier of the govt. of Orenburg, and flowing s. through the dist. of Troizk, past the town of Virchni-Uralsk, to its confluence with the Kisil: in this region its current is very rapid, due to its narrow and uneven bed. At the town of Orsk the U. bends and runs w. as far as the mouth of the river Tchagan; after which it flows directly s. into the Caspian Sea. It is in parts deep enough for navigation; but the scarcity of wood for ship-building, and the number of sand-banks that bar the river, prevent navigation. It abounds in highly esteemed varieties of fish, and yields to the Cossacks settled along its banks an annual revenue of 600,000 roubles (about $450,000). The U. has long served as the boundary between Russia and the Kirghis Steppes, and many forts have been erected, and settlements of Cossacks—known as the U. Cossacks—established along the river. The direct length of the U. is estimated at 550 m.; with its windings, 1,040 m. The principal affluents are the Kisil and Sakmara on the right, and the Or and Ilek on the left.

URAL-ALTAIC: see TURANIAN.

URALITE, n. *ū'rā-līt* [from the *Ural* Mountains, where first found]: a pseudomorphous mineral of a dark-green or greenish-black color.

U'RAL MOUNTAINS (the *Hyperborean Mountains*, or *Rhipæi Montes*, of the ancients): chain of mountains, forming the boundary between Europe and Asia, separating European Russia on the w. from Siberia on the e. The U. M. extend s. from the Kara Sea, arm of the Arctic Ocean, to the middle course of the Ural river—i.e., lat. 70°—50° n.; 1,333 m. in length, with breadth varying from 16 to 66 m. Though the U. M. form a single uninterupted chain, they are usually divided by geographers into the N., Middle, and S. Ural. The N. Ural separates the basins of the rivers Petchora and Ob, is mostly rocky, seldom rises higher than 3,600 ft., and is commonly called *Poustoi* (empty), because it is extremely poor in mineral wealth. The Middle Ural, commonly called *Roudnoi* (metalliferous), principal seat of the mineral riches of the chain, comprises the highest peaks, as the Kanjakovski Kamen, 5,000 ft.; but in some places the height is so insignificant, and the slope so gentle, that travellers can scarcely distinguish it from the lowlands. The Southern U. divides into 3 branches, 2 of which extend e. of the Ural river, and gradually disappear in the Uralo-Caspian deserts; while the third branch extends along the w. bank of the Ural. The chain is composed chiefly of crystalline and metamorphic rocks, granite, gneiss, porphyry, chloritic, and micaceous schists. The U. M., especially the middle and the n. of the S. Ural (the govts. of Perm and Orenburg), abound in mines of gold, platinum, copper, and iron. These mines, or *zavods*, belong partly to the state and partly to individuals. Of the latter, the chief are the Nijni-Tagilsk, belonging to the Demidoff family (a grant from Peter the Great); the Verchisetsk and Neviansk, belonging to the Takosleff family. The gold diggings are on both slopes of the mountains: sometimes nuggets of considerable weight are found—the heaviest ever found in the chain being about 80 lbs. During about half a century the annual value of the product of the Ural mines has increased from 50 millions of roubles to about 80 millions. From 1870 to 1880 the gold production reached 9,600 lbs. per annum, and that of platinum about 3,400 lbs. From 1880-84 it was 6,949 lbs. More than four-fifths of the iron of Russia is got from the Ural districts: in 1884 the output was, of pig-iron 337,000 tons, of iron 193,700 tons, and of steel 38,167. The magnetic ironstone of the Urals is admirably suited for making steel and wire, and is largely exported for this purpose. Several thousand tons of copper are raised annually, besides immense quantities of rock-salt—1884, 471,000 tons. Among precious stones, most notable is the emerald, found on the e. slope in the dist. of Ekaterinburg: some of these have weighed more than 13 dwts. Other precious stones are the beryl, topaz, amethyst, and perhaps the diamond, for, though found in a certain locality, as predicted by Humboldt, it is now generally believed that the locality was 'salted.' Malachite and jasper also occur. In 1884 a pop. of 183,914 was supported by the mining and metallurgical operations in the Ural Mountains.

URALSK, *ô-râlsk':* province of s.e. Russia; 141,174 sq. m.; n. of Caspian Sea, and for the most part e. of the Ural river—i.e., in Asia. Most of U. is below sea-level. It is dotted with salt lakes.—Pop. (1888), 525,330; of whom 405,000 are nomadic Kirghis, 15,000 Russians, and the rest Ural Cossacks; (1889) 559,552.

URALSK, *ô-râlsk':* Russian town, cap. of prov. of U.; on the right bank of the Ural, 150 m. s.s.e. of Samara, 1,095 m. from Moscow. It was founded 1622 by the Ural Cossacks, and was till 1775 known as Jaitsk. A good trade is carried on—the principal articles being fish, isinglass, caviare, tallow, and cattle. There are three great yearly fairs—in July, Oct., and Jan.—Pop. (1888) 26,054.

URANIA, n. *ū-rā'nĭ-ă* [L. *uranĭa;* Gr. *ourania*, the heavenly—from Gr. *ou'rănos*, heaven]: in *anc. myth.*, daughter of Zeus and Mnemosyne, the Muse of Astronomy (see MUSES, THE); one of the minor planets; a genus of plants with one species, found in Madagascar, and characterized by the enormous size of its leaves. URANITE, n. *ū'ră-nīt*, a mineral, consisting of phosphate of uranium with oxide of copper or lime, of a bright yellow or green color—differs from *mica* in being neither flexible nor elastic. URANIUM, n. *ū-rā'nĭ-ŭm*, an elementary body, a metal obtained from several minerals in the form of a powdery substance of a grayish-black color with a metallic lustre, preparations of which are used for imparting fine orange tints to glass and porcelain enamel. URANIC, a. *ū-răn'ĭk*, of or pertaining to uranium. U'RAN, or URANIUM OCHRE, the earthy oxide of uranium, found in soft friable masses, having various hues of yellow and orange.

URA'NIUM (symb. U, at. wt. 239, sp. gr. 18·7): very hard but moderately malleable metal, resembling nickel or iron in lustre and color; but in a finely comminuted state occurring as a black powder. It is not oxidized by exposure to air or water at ordinary temperatures; but if heated in the air, it burns brilliantly, and is converted into oxide. It is comparativly rare, never occurring native—its sources being *Pitchblende*, which contains nearly 80 per cent. of black oxide; *Uranite*, which contains a hydrated double phosphate of lime and uranium; and *Chalcolite*, which is a similar phosphate of copper and uranium. U. forms the following oxides: *Uranous oxide*, UO_2, obtained by heating uranoso-uranic oxide, U_3O_8, in a current of hydrogen; it is a brown powder, and when dissolved in acids forms green salts: *Uranoso-uranic oxide*, U_3O_8 ($=UO_2 2UO_3$), the chief constituent of pitchblende, is obtained artificially by igniting uranous oxide (or the metal) in contact with air; it is a dark-green velvety powder; ignited alone, it forms a black oxide, U_4O_5. *Uranic oxide*, or *Uranyl oxide*, UO_3, is obtained by dissolving the metal or its lower oxides in nitric acid, and heating in a glass tube the resulting uranic nitrate till it begins to decompose at 482° F.: uranic oxide remains as yellow powder. Uranic oxide and its hydrates (monohydrate, $UO_3.H_2O$; uranyl dihydroxide, $UO_2(OH)_2$) dissolve in acids, forming uranic salts. The black oxide is employed in coloring porcelain. *Sodium uranate*, $Na_2O(UO_3)_2$, is used to give greenish or yellowish color to glass, and as yellow pigment in glazing porcelain. All U. compounds, when fused with phosphorus salt or borax in the outer blow-pipe flames, produce a clear yellow glass, which becomes greenish on cooling.—U. ores exist in the Dakotan Black Hills under the forms *Uranite*, found on analysis to have the chemical constitution $U_2O_3.2PO_4.Cu$; *Pitchblende* of the composition U_3O_4, with iron, lead, magnesium, manganese, silica; *U. ochre*, $U_2O_3.3SO_3$; *Trogerite*, $3UO_3.As_2O_5$. Till the discovery of these minerals in the Bald Mountain of the Black Hills, all the U. of commerce came from Annaberg in Saxony, and Redruth in Cornwall, England.

URANOGRAPHY, n. *ū-rā-nŏg'ra-fĭ* [prefix *urano-;* Gr. *graphō*, I write, I describe]: description or chart of the heavens; that branch of astronomy comprising the determination of the relative situations of the heavenly bodies and the construction of celestial maps, globes, etc.

URANUS, n. *ū'ra-nŭs* [mod. L.—from Gr. *ouranos*, heaven; specifically, the celestial vault]: in *Gr. myth.*, the most ancient of the gods. His wife was Terra, or Earth, by whom he had, first, the children called the Hundred-handed, Briareus, Cottus, and Gyges; secondly, the Cyclopes, Arges, Steropes, and Brontes; thirdly, the Titanes, Oceanus, Cœus, Saturnus; and, lastly, the Giants. Uranus hated his children, and confined them in Tartarus; but, at the instigation of his mother, Saturnus (see SATURN), youngest of the Titans, overthrew, dethroned, and mutilated him; and from his blood sprang the Furies, Alecto, Tisiphone, and Megæra.

U'RANUS: planet (named at first *Georgium Sidus* and *Herschel*) whose orbit is between those of Saturn and Neptune; thus next to the outermost known planet in the solar system: see PLANET: SOLAR SYSTEM.

URAO, n. *ū-rā'ō:* a native name for the sesquicarbonate of soda, found in crystalline crusts in the dried-up lakes and river-courses of S. Amer., known to the Arabs of Africa, etc., by the name of *trona*.

URARI, n. *ū-râ'rĭ* or *ū'răr-ĭ:* see CURARE.

URATE: see under URIC.

URBAN, a. *ėr'ban* [L. *urbānus*, belonging to the city—from *urbs*, a city]: of or belonging to a city or town; resembling or characteristic of a city; dwelling in cities or towns; in *OE.*, courteous. URBANE, a. *ėr-bān'*, courteous; civil; polite; refined. URBANITY, n. *ėr-băn'ĭ-tĭ*, courtesy; politeness; civility; polished manners; suavity; affability.

URBAN, *ėr'ban*, II. (surnamed OTHO or ODO), Pope: abt. 1042–99, July 29 (reigned 1088–99); b. at Lagery, near Chatillon-sur-Marne; of knightly rank. He was educated for the priesthood, and was archdeacon of Rheims, when he resigned, and became a monk at Clugny, of which he afterward became prior. In 1078 he was cardinal-bp. of Ostia, and was elected pope 1088, in a council at Terracina, during the schismatical pontificate of the anti-pope, Guibert, styled Clement III. Soon after his election, he resumed possession of Rome, whose fortresses had been occupied by the anti-pope, whom he compelled to withdraw. Guibert, however, was still supported by his patron, Henry IV. of Germany, who had long been at feud with the papal see; and U., with Countess Matilda, having formed a strong party in Italy, Henry once more led an army thither, restored the anti-pope, and forced U. to flee. U. established himself at Anagni. The revolt of Conrad, eldest son of Henry, against his father, and his coronation as emperor at Milan 1093, and still more the successful appeal of Henry's queen, Adelaide, turned the tide of affairs in Italy. A great council was held at Piacenza 1095, in which the anti-pope and his adherents were excommunicated. In the same council the Crusade was proclaimed; and, in the following autumn, U., in a council held at Clermont, made the well-known appeal which called forth that enthusiasm which was destined to lead to the long series of efforts for recovery of the Holy Land, forming so striking a characteristic of mediæval history. In his later pontificate U. pursued the same course, and in the end succeeded in driving Henry IV. out of Italy. The most important event of the last years of his pontificate was the council held at Bari 1098, in which many Greek bishops were present, and in which the addition of the words *Filioque* (q.v.) to the creed was discussed. Thence he returned to Rome, of which he obtained full and undisturbed possession. He died 14 days after the fall of Jerusalem, but before the news reached him.

UR'BAN V. (originally named WILLIAM DE GRIMOARD), Pope: 1309–70, Dec. 19 (reigned 1362–70); b. Grisac, Languedoc, France. He was a Benedictine monk; became abbot of Auxerre 1353, and of St. Victor at Marseille 1358. On the death of Innocent VI, 1362, Oct. 28, U. was elected pope at Avignon, where he continued to reside, sending his legate, Cardinal Gil de Albornoz, to reduce the rebellious subjects of the papal see in Rome. After various alternations of peace and contest, U. resolved to return in person to the ancient seat of the papacy. He set out 1367, and, landing at Corneto, proceeded first to Viterbo, and reached Rome in Oct. He found the papal city in great disorder, and all Italy overrun by bands of mercenaries, and a prey to frightful intestine divisions. Failing in his endeavors to correct these disorders, he resolved 1370 to withdraw from Rome. He arrived at Avignon Sep. 24, where he died three months later, leaving a reputation of great personal piety, disinterestedness, and zeal for the interests of religion. He was succeeded by Gregory XI.

URBAN VI. (original name **Bartolommeo Prignano**), Pope: 1318–89, Oct. 15 (reigned 1378–89); b. Naples. At the time of his election to the papal see, 1378, Apr. 8, he was abp. of Bari. On the death of Gregory XI., who had finally returned to Rome, and had died in that city, Prignano was elected in a conclave held under circumstances of great excitement, owing to the apprehension, on the part of the populace, of an intention to elect a French pope, and again abandon Rome. The cardinals in the conclave numbered 16, of whom 12 were French and 4 Italians. Prignano, though not a cardinal, was elected unanimously, though the populace broke into the hall. Prignano assumed the title Urban VI., and was crowned Apr. 18, in the presence of the 16 cardinals. In July the 12 French cardinals assembled at Anagni, and revoked the election of U., declaring that in it they had acted under fear of violence. To this course they are said to have been led by the rigor and the intemperate severity with which U. was proceeding in reforms of discipline, especially as regarded the simony and the irregular life of the clergy, including the cardinals themselves. Joined by three of the Italian cardinals (one of them having died), they elected the cardinal-bp. of Cambray (born Count of Geneva) pope, under the name Clement VII., Sep. 20. Clement took up his residence at Avignon. U. remained at Rome, where he appointed 26 new cardinals, and excommunicated Clement and his adherents. This conflict was the origin of the **Western Schism** (q.v.). U. was recognized as the lawful pope by one portion of the West, Clement by the other; and each maintained his claim by extreme measures. U. especially, though his title seems to have been best founded, weakened his cause by his excessive violence. Having engaged in a dispute with Charles, King of Naples, whom he himself had crowned, he was besieged by that prince at Novara, whence he withdrew to Genoa, taking with him, as prisoners, the cardinals of his party with whom he had quarrelled, several of whom he is said to have put to death. In 1389, while on his way to Ferentino, he fell from his horse, and having been conveyed to Rome, died there from the injuries thus sustained.

URBAN VIII. (originally named **Maffeo Barberini**), Pope: 1568-1644, July 29 (reigned 1623–44); b. Florence. After a long series of brilliant services in the domestic administration and in foreign nunciatures, he was elected pope (succeeding Gregory XV.) 1623, Aug. 6. In the difficult position of Roman affairs he acquitted himself with much dexterity. His pontificate was signalized by the acquisition by the holy see of the duchy of Urbino (q.v.) 1626. U. died in Rome. His memory has suffered through the imputation of nepotism; but his administration was, on the whole, vigorous and enlightened. He was the founder of the celebrated College of the Propaganda, and to him Rome is indebted for many public works, including large and important additions to the Vatican Library. Some of the early stages of the Jansenist controversy (see **Jansen**) fall within this pontificate.

URBANA, *ėr-băn'a:* city, cap. of Champaign co., O.; on the Erie, the Pittsburgh Cincinnati Chicago and St. Louis, and the Cleveland Cincinnati Chicago and St. Louis railroads; 31 m. w. of Danville, 42 m. w.-by-n. of Columbus. It is in a rich agricultural region; has gas and electric lights, and Holly water-works system; and contains 15 churches, Y. M. C. A. building, court-house, high school (cost $125,000), several grammar schools, public library, Urbana Univ. (New Church), Odd Fellows' Temple, Soldiers' Monument (cost $15,000), 1 national bank (cap. $50,000), 1 private bank, and 1 daily, 3 weekly, and 1 monthly publications. The industries comprise the manufactures of the U. S. Rolling Stock Co. and the Urbana Machine-works, besides those of agricultural implements, carriages and wagons, stoves, brooms, shoes, furniture, leather, and woolen goods.—Pop. (1880) 6,252; (1890) 6,510.

URBI ET ORBI, *ėr'bĭ ĕt or'bī* [L. *literally*, to the city, i.e., Rome, and to the world]: the form used in the publication of papal bulls, to signify their formal promulgation to the entire Cath. world, as well as to the city of Rome. By canon law, promulgation is necessary to give any new law force. A controversy arose in the 17th c. as to the kind of promulgation which should be regarded as sufficient. In ancient times the practice of the popes had been to send copies of their bulls to the primates, metropolitans, and other ecclesiastical heads of the several churches, to be by them communicated to their suffragan bishops; but in course of time the practice of publicly proclaiming the decree by the voice of a crier (*præco*) from the piazza of the Campo di Fiore (*in acie campi Floræ*), or of affixing the document to the gates of the Vatican, was substituted; and decrees addressed URBI ET ORBI, and published in this way, were held to be sufficiently promulgated, and to be thenceforth of full force. French jurists of the 17th c. strenuously opposed this view.

URBINO, *ôr-bē'nō:* city of central Italy, cap. of the prov. of Urbino and Pesaro; 20 m. s.w. of Pesaro, between the rivers Metauro and Foglia. Its walls date from the 14th c.; it has a magnificent palace, formerly the residence of the Dukes of U., where was the famous library of the Della Rovere family, afterward removed to the Vatican. Another handsome palace is that of the Albini, belonging to an Albanian family who had escaped from the ferocity of the Turks. and settled in U., where they became rich and powerful, and gave a pope to the church, who took the name Clement XI. U. is an archiepiscopal see. It is the birthplace of Raphael (q.v.). U. was a *municipium* or free town under the Romans, and during the middle ages became the seat of a race of independent dukes. In 1626. on the death of Francesco, the last duke, Pope Urban VIII. took possession of the duchy as a vacant fief; and it was part of the Papal States till it became part of the kingdom of Italy.—Pop. (1880) 5,087.

URCEOLAR, a. *ér'sĕ-ō-lėr* [L. *urcĕŏlus*, a little pitcher, a water-pot, dim. of *urcĕus*, a pitcher]: in *bot.*, fleshy or bulging, as tubercles or leaves. **UR'CEOLATE**, a. *-lāt*, urn-shaped; shaped like a pitcher. **UR'CEOLUS**, n. *-lŭs*, in *bot.*, the two confluent bracts of the genus *Carex;* any anomalous organ shaped like a cup.

URCHIN, n. *ér'chĭn* [OE. *urchone*, a hedgehog—from OF. *ireçon*—from L. *erĭcius;* Gr. *chēr*, a hedgehog, an urchin: F. *hérisson*, a hedgehog]: the hedgehog; a familiar name given to a child; a little child; in *OE.*, a goblin; imp. **SEA-URCHIN**, the echinus, a creature having a spherical shell flattened on the lower side and covered with prickly spines (see ECHINIDÆ).

URDU, n. *ôr'dô* [Hindu *urdu*, an army, a camp, a market]: the Hindustani language as spoken by the Mohammedan population of India. It is really the Hindi language, which is of the Aryan family, with a number of Persian, Arabic, and Turkish words introduced. It is now the language most largely used by Europeans in their intercourse with the natives of India.

URE, n. *ūr* [OF. *eure;* F. *œuvre*, work—from L. *opĕra*, work]: in *OE.*, practice; use.

URE, *yôr*, ANDREW, M.D.: Scottish chemist: 1778–1857, Jan. 2; b. Glasgow. He was educated at Glasgow Univ., but studied medicine at Edinburgh. Returning to Glasgow, he received the degree M.D. 1801. In 1802 he became prof. of chem. and nat. philos. in the Andersonian University (see ANDERSON, JOHN), was active in establishing (1809) an observatory at Glasgow, and was appointed its first astronomer. 1813 he published *Systematic Table of the Materia Medica;* 1818, *New Experimental Researches on Some of the Leading Doctrines of Caloric*, memoir read before the Royal Soc., and which brought U. into notice. 1821 appeared his *Dictionary of Chemistry;* 1822, a paper *On the Ultimate Analysis of Animal and Vegetable Substances*, one of the earliest contributions to organic analysis, and a translation of Berthollet on *Dyeing;* and 1829, a *System of Geology*, in which the hypothesis of a general Flood was maintained. 1830 U. removed to London, and 1834 was appointed analytical chemist to the board of customs. From this time his works assume a technological character, e.g., *Dictionary of Arts, Manufactures, and Mines* (1839), 7th ed. brought out by Robert Hunt in 3 vols. (1875), sup. vol. 1878. U. was a fellow of the Royal Society, and a member of the Geological, Astronomical, and other societies.

UREA, n. *ū-rē'ă* [Gr. *ouron*, urine]: the characteristic constituent of urine; an organic matter which derives its name from its having been originally discovered in the urine: compound, CON_2H_4, or $CO < \begin{matrix} NH_2 \\ NH_2 \end{matrix}$. It was long regarded as an organic base or alkaloid; but is now placed among the *amides*, a group of neutral and for the most part crystallizable compounds, of the *ammonium type* (see TYPES, CHEMICAL), derived from ammonium salts by abstraction of water, or from acids by substitution of NH_2 (amidogen) for OH (hydroxyl). Pure U. which has been allowed to crystallize slowly, occurs in transparent, colorless, four-sided prisms; but when the crystallization is rapid or disturbed, it separates in small, white, silky needles. It is devoid of smell, has a cooling, saline taste, like that of saltpetre (which it closely resembles in external form), and is very slightly deliquescent. It is readily soluble in water and alcohol, but only slightly in ether. When heated to about 248° F., it fuses, evolves ammonia, and becomes completely decomposed. A solution of pure U. in distilled water may be kept for a long time, but at 212° F. emits ammonia and forms a metallic carbonate. The same change is produced by fusion with the alkaline hydroxides, and when U. is heated with water in a sealed tube to a temperature above 212°:

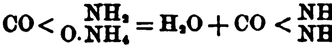
$$COH_4N_2 + H_2O = CO_2 + 2NH_3.$$

A similar change takes place slowly at ordinary temperatures in the U. contained in the urine, the mucus of the bladder acting as a ferment, and thus rendering urine ammoniacal after it has been kept for a few days.

The following are some of the most important of the compounds of urea. *Nitrate of U.*, $CH_4N_2O.NO_3H$, and *Oxalate of urea*, $(CH_4N_2O)_2C_2H_2O_4$, are readily crystallizable salts, formed by direct addition of the respective acids to a moderately strong solution of urea. As nitrate of U. requires eight parts of cold water, and is still more insoluble if an excess of free nitric acid is present, and the oxalate is more insoluble than the nitrate, while U. dissolves in its own weight of water, these salts may be employed to test for, and approximately determine the quantity of, U. Among the compounds of U. with metallic oxides, those which it forms with the oxides of mercury are especially interesting, and have been completely examined by Liebig. A result of his researches is his celebrated method, now in universal use, of determining the amount of U. volumetrically.

U. occurs as the main and characteristic ingredient of the urine of man and mammals, being most abundant in that of carnivorous, and least so in that of vegetable, feeders. For the average quantity excreted by the human subject, see article **Urine**. It is also a constituent of the fluids of the eye, of the sweat, and (in minute quantity) of the blood, and of the liquor amnii (of the fetus). There can be no doubt that it is a final product of the regressive metamorphosis of the living tissues, or of their disintegration into simpler compounds, by means of which the final elimination of the worn-out structures is facilitated. Thus, we find that U. may be obtained by oxidizing agents from uric acid, creatine, allantoin, etc., in the laboratory, and there is every reason to suppose that similar changes may occur in the system. Whether, when an excess of food is taken, a portion of it may be formed in the blood into U., and then at once separated without ever having entered into the structure of the higher tissues, is a point not decided.

Until the discovery by Liebig and Wöhler of the artificial formation of U., its only source was the urine, from which, after evaporation, the nitrate was separated, purified by animal charcoal, and the U. liberated by addition of carbonate of baryta, and finally extracted by alcohol, from which it was allowed to crystallize. It is now known that there are many different ways of forming it—as by heating ammonium carbonate to 266°—284° F.:



$$CO<\genfrac{}{}{0pt}{}{NH_2}{O.NH_4} = H_2O + CO<\genfrac{}{}{0pt}{}{NH_2}{NH_2};$$

by action of ammonia on carbonyl chloride:

$$COCl_2 + 2NH_3 + CO(NH_2)_2;$$

or by action of the same on ethylic carbonate:

$$CO(OC_2H_5) = 2NH_3 + 2(CH_5.OH) + CO(NH_2)_2;$$

but the best practical method is essentially that of obtaining it from ammonium isocyanate. In this process potassium isocyanate is dissolved in a little water, and dry neutral ammonium sulphate added, in quantity equal to the cyanate. The whole is evaporated to dryness in a water-bath, and the residue boiled with strong alcohol, which dissolves out the U., leaving the potassium sulphate and excess of ammonium untouched. The filtered solution, concentrated by distilling off a portion of the spirit, deposits the U. in large crystals.

The COMPOUND UREAS are very numerous, and are of two principal classes—viz., the *alcoholic* derivatives, formed by action of amines on cyanic acid, or of ammonia and amines on cyanic ethers; and the *acid-radical* derivatives, which contain acid radicals formed by action of acid chlorides or anhydrides on U.—The compounds of the first class greatly resemble U. in their properties and reactions. They combine with one equivalent of an acid. By boiling with alkalis they are resolved into carbon dioxide and amines. The compounds of the second class, those containing acid radicals, are not capable of forming salts with acids; alkalis decompose them into U. and the corresponding acid.

UREDO, *ū-rē'dō:* genus of minute parasitic fungi, order *Coniomycetes*. The original genus U. has been divided into many genera, forming a group *Uredineæ*, which contains a multitude of species, parasitic on phanerogamous plants of almost every nat. order and in all parts of the world. Different plants have their own peculiar parasites of this kind, or at least the same *Uredineæ* are confined to plants nearly allied. A few species occur on ferns. Every external part of plants, except the roots, is liable to be infested with these fungi; and some of them attack the inner tissues, their spores at length breaking through the outer strata of cells. Submerged parts of plants are never affected by them, for fungi dislike water; but the floating portions of aquatic plants are not exempt; and in all cases a moist atmosphere seems favorable to their development. Rank luxuriance of growth is often attended by their appearance. A plant once attacked is afterward subject, if perennial, to the same parasite, even if removed to another situation. There is reason to believe that the spores of the *Uredineæ* are taken up by the roots of plants from the soil, and find their way with the sap to the place proper for their growth. See **Brand**: **Bunt**: **Mildew**: **Rust**: **Smut**.

UREME'YAH: see **Oroomiah**.

URENA, *ū-rē'na:* genus of herbaceous plants, nat. order *Malvaceæ*. The bark is very fibrous. The fibre of *U. lobata* and *U. sinuata*, weeds common in most parts of India, is used as substitute for flax. It is strong and moderately fine.

URETER, n. *ū'rē-tėr* [Gr. *ourētēr*, the passage for the urine—from *ouron*, urine]: in *anat.*, the tube or duct that conveys the urine from the kidney to the base of the bladder. It is about 18 in. in length, and enters the bladder in a slanting direction to prevent regurgitation (see **Kidneys, The**).

When a concretion is formed in the kidney, the ordinary and most favorable event is that it should descend through the U. to the bladder. The passage of a stone through this tube gives rise to a series of violent symptoms: the patient complains of sudden and severe pain, first in the loins and groin, subsequently in the testes (in the male) under the thigh. The testes are retracted spasmodically; and there are violent sickness, faintness, and collapse, which may last two or three days, being relieved only when the stone reaches the bladder. Treatment consists in the warm bath, and (under medical advice) inhalation of chloroform, or opium in large doses, to allay spasm and deaden pain, free use of diluents to wash down the concretion, and, if the sickness is very severe, an occasional tumbler of hot water containing half a tea-spoonful of carbonate of soda. **Ureteritis**, n. *ū-rē'tėr-ī'tĭs*, inflammation of the ureter. **Urethra**, n. *ū-rē'thră* [Gr. *ourēthra*]: the canal by which the urine is conveyed from the bladder and discharged. **Ure'thral**, a. *-thrăl*, pertaining to the urethra. **Uretic**, n. or a. *ū-rĕt'ĭk*, a medicine which increases the secretory action of the kidneys; of or pertaining to.

URFA, *ôr'fâ*, or **Or'fa**: modern name of **Edessa** (q.v.).

URGA, *ôr'gâ* (called by the Mongols **Huræ** and by the Chinese **K'u-lun**): town of Mongolia, administrative centre of the n. and e. Khalkas; on the river Tola, in a valley, 4,100 ft. above sea-level; lat. 48° 20′ n., long. 107° 30′ e.; 350 m. s.e. of Irkutsk, 700 m. from Peking, 168 m. from Kiachta. It consists of two settlements 2 to 3 m. apart—one occupied by Mongols, pop. 10,000; the other by Chinese, pop. 5,000, mostly men—the law forbidding Chinese to bring their wives. The Chinese town, which is the trading quarter, has many substantially-built houses and a generally thrifty appearance. In a suburb of the Mongol town is a Lamaist monastery, the seat of a 'resplendently divine Lama,' ranking as the third dignitary in the Lamaist Church, and metropolitan of the Khalkas: see **Lama**. The convent covers a large area and includes the dwellings of the priests. Each family educates one of its children for the Lamaist priesthood. There is a Chinese gov., appointed at Peking.—Total pop. of U. (as above) 15,000

URGE, v. *érj* [L. *urgērĕ*, to press upon, to drive]: to push; to impel; to incite; to press, as an argument or objection; to importune; to press forward; to constrain; in *OE.*, to provoke; to exasperate. **URGING**, imp. *ėrj'ing:* ADJ. pressing with solicitations; importunate. **URGED**, pp. *ėrjd.* **URGENT**, a. *ėrj'ĕnt*, pressing; importunate; forcible; cogent. **URG'ENTLY**, ad. *-lĭ.* **URG'ENCY**, n. *-ĕn-sĭ*, pressure of difficulty or necessity; entreaty; importunity.—SYN. of 'urge': to animate; instigate; stimulate; encourage; enforce; solicit.

URI, *ô'rē:* one of the Waldstädten or Forest Cantons of Switzerland; part of the Hill Country (see SWITZERLAND) which surrounds the Lake of Lucerne; bounded w. by the cantons of Unterwalden, Bern, and Valais; 415 sq. m. It consists of one valley, that of the Reuss, about 30 m. long, inclosed on all sides by lofty mountain chains, which include the s.e. bay or reach of the lake into which the river falls. A great high-road through the valley ends on the s. at the St. Gothard Pass, connecting the Uri with Ticino, and forming part of one of the great routes into Italy. Uri is almost entirely pastoral. Goats are very numerous. In the low grounds, there are a few fields of corn and potatoes, and gardens and orchards, but even this cultivation is limited. The people speak a Swiss-German dialect and are Rom. Catholics. Uri is a democracy. The landesgemeinde, held in a meadow once a year, is formed of the whole male population who have reached 20 years of age: the highest power resides in this assembly. The preconsideration and superintendence of the law belongs to the *landrath*, of 7 members chosen by the landesgemeinde and 61 by the several communes. A governing council of 11 members, with the landamman as pres., discharges executive functions. Civil justice is administered in the highest instance by a cantonal court of 11 members. A tribunal of 7 members decides in criminal causes. Altorf is the cap., with pop. (1880) 2,901. A fountain surrounded by stone statues of Tell (q.v.) and his son marks, according to the doubtful tradition, the spot where Tell took his aim, and another that where the boy stood with the apple on his head.—Pop. (1870) 16,107; (1880) 23,694; (1888) 17,249

URIC, a. *ū'rĭk* [Gr. *ouron*, urine (see URINE)]: of or from urine. **U'RATE**, n. *-rāt*, a salt of uric acid; the common deposits in the urine known as sand or gravel.

U'RIC (formerly LITHIC) **ACID** ($C_5H_4N_4O_3$): substance named from its being a constituent of urine and of urinary calculi respectively. In a state of purity it occurs in the form of loose white powder or scales consisting of minute crystals, devoid of smell or taste, only very slightly soluble in water (1 part requiring about 15,000 parts of cold and 1,800 of boiling water), and quite insoluble in alcohol and ether. This acid is, however, soluble without decomposition in strong sulphuric acid, and it may be thrown down from this solution by addition of water. It is soluble also in the carbonates, borates, phosphates, lactates, and acetates of the alkalis, extracting from these salts a part of their base, with which it forms acid urates. Litmus paper is reddened by its moist crystals, or by a hot watery solution. This acid is not volatile, and by dry distillation is decomposed into carbonate of ammonia, urea, cyanuric acid, hydrocyanic acid, etc. By action of strong nitric acid on U. A. in the cold is produced *Alloxan*, $C_4H_2N_2O_4$. *Allantoin*, a compound found in the allantoic liquid of the fetal calf, and whose formula is $C_4H_6N_4O_3$, is, producible artificially, together with oxalic acid and urea by boiling U. A. with lead dioxide and water: $2C_5H_4N_4O_3 + O_2 + 5H_2O = C_4H_6N_4O_3 + 2C_2H_2O + 2CH_4N_2O$. This is a most important result in its physiological bearing, since it shows how U. A. is a probable stage toward the formation of urea, and as explaining a probable source of the oxalic acid, often present in the urine in cases of deficient respiration and aeration; and this view is confirmed by the experiment of introducing U. A. into the stomach or veins of an animal, when the presence of oxalate of lime, and the augmentation of urea, are very soon perceived in the urine.

U. A. is a very weak bibasic acid, forming with bases two series of salts, the neutral and the acid, of which the former are the more soluble. Among the most important of these urates are: *Acid potassium urate*, $C_5N_4H_3KO_3$, a sparingly soluble white mass composed of minute needles; *Sodium urate*, the chief constituent of the *chalk-stones* of gout; *Ammonium urate*, also sparingly soluble.

U. A. is widely distributed throughout the animal organism. It occurs not only in the urine of man and carnivorous animals, but is the chief constituent (either free or in combination) of many calculi occurring in the kidneys or bladder, and of numerous urinary sediments. The urinary secretion of birds and reptiles consists almost entirely of urates, which are found also in the excrements of caterpillars, butterflies, beetles, etc., and of many mollusks. Moreover, in very minute quantities it occurs as a urate in healthy blood, in which fluid it has been found in excess in gout and Bright's disease, and is a constituent of the aqueous extract of the spleen, liver, lungs, pancreas, and brain.

The best and most ready mode of obtaining pure U. A. is from the semi-solid urine of serpents, which consists almost entirely of U. A. and ammonium urate. The mass is boiled with potash, which expels any ammonia that is present; and a stream of carbonic acid is then passed through the strained potash solution, which throws down acid urate of potash. This precipitate is dissolved in water, and decomposed by hydrochloric acid, which throws down the U. A. in minute crystals. It is a glistening, snow-white powder, tasteless, inodorous, very sparingly soluble.

The researches of Wöhler and Liebig on the products of decomposition of U. A. by nitric acid constitute an epoch in organic chemistry. The most important products, some obtained directly, others indirectly, are: *Alloxan*, $C_4N_2H_2O_4$, from which comes a series of acids; *Parabanic acid*, $C_3H_2N_2O_3$; *Alloxantine*. $C_8H_4N_4O_7$; *Murexide*, the ammonium salt, $C_8H_4(NH_4)N_5O_6$, of *purpuric acid*, $C_8H_5N_5O_6$; and *Urea* (q.v.). Of these substances, *murexide* has two special claims to notice: it is used as a pigment in dyeing (though now to a large extent superseded by Rosaniline—q.v.), being probably the old *Tyrian Purple* (see MUREXIDE); and it affords a ready test for a mere trace of U. A. In using it for the latter purpose, the substance supposed to contain U. A. is heated on a slip of glass with a drop of nitric acid, and carefully evaporated to dryness. If U. A. be present, the residue has a red color, which is converted by vapor of ammonia into a fine crimson; and the addition of a drop of a solution of potash develops a splendid purple tint, which disappears on application of heat.

U. A. must be regarded, like urea, as a product of the disintegration of the tissues; and it is probable that all the urea which is secreted may have pre-existed in the form of U. A. Whatever (like excessive exercise or water-drinking) increases the amount of urea, decreases that of U. A., and *vice versâ:* see URINE.

URICONIUM, *ū-rĭ-kō'nĭ-ŭm:* ancient Roman city of Britain, whose site is about four m. e. of Shrewsbury, and is partly occupied by the village of Wroxeter; about 160 m. n.n.w. of London. The original name seems to have been *Viroconium*, and it is mentioned by Ptolemy as existing in the beginning of the 2d c. The remains of the city show it to have been a place of much importance. The wall, still traceable near the banks of the Severn, inclosed a space more than three m. in circumference. The remains have been explored, and many curious relics discovered of Roman civilization in Britain; rings, hair-pins, and combs being numerous. The human remains found, indicating death by violence or by suffocation, make it probable that the city was sacked and burned by enemies perhaps about the 5th c. From about the 12th c. the ruins were used as materials for other buildings: some churches in the neighborhood were built of the old Roman bricks. The most remarkable relic is the *Old Wall*, a great mass of Roman masonry, which appears to have been the side of a great edifice.

URIM, n. *ū'rĭm* [Heb. *urim*, lights; plu. of *ur*, light, flame]: one of the appendages of the breastplate of the high-priest among the anc. Jews. URIM AND THUMMIM, mysterious contrivance in or on the breastplate of the Jewish high-priest, consisting either of the four rows of precious stones on which the names of the 12 tribes were engraved, or more probably of two sensible objects, (conjecturally) symbolizing 'Command' and 'Truth' (LXX.), or 'Utterance' and 'Truth' (Vulgate). [Compare the picture of 'Truth' (Aletheia)—in sapphire or other precious stones—suspended from the Egyptian high-priest's breast.] They seem to have been used as a sort of divine oracle—sometimes giving no answer (1 Sam. xxviii. 6). They are mentioned first in Ex. xxviii. 30, and are never mentioned after Solomon's time. There is no real knowledge concerning their original design or the mode of their later (prob. superstitious) use.

U'RINARY SED'IMENTS: all those substances which occur in a non-dissolved state in the urine. Most of these sediments are not formed until after the urine has been discharged and has cooled; some, however, are formed in the urinary organs, and under favoring conditions may give rise to urinary concretions. Hence it is important to ascertain whether a sediment occurring in a specimen of fresh urine has been formed before or after its discharge.

The chemical and microscopical characters of these sediments have a double bearing on the detection of disease: (1) From the investigation of these sediments, according to Prof. Vogel, we can draw sure conclusions regarding special changes going on in the general nutrition of the body. They show us that an excessive quantity of certain substances (e.g., uric, hippuric, or oxalic acid) is being discharged with the urine, and has therefore been produced in the body; and we thus often obtain at a glance information of great importance, procurable otherwise by only a tedious process. (2) They point out to us certain local diseases of the urinary system. Thus, from a sediment containing pus, we infer that suppuration is going on in some part of that system; and the presence of cylindrical casts or tubes in the sediment informs us of certain morbid changes in the structure of the kidneys; and if the ordinary symptoms reveal the presence of stone in the bladder, we can ascertain its probable nature from the character of the sediment or gravel.

The mode of formation of morbid sediments is well illustrated by a sketch of the changes which healthy urine undergoes after prolonged exposure to the air. In the course of two or three days the acidity of the urine is found to have increased, and this condition of *acid fermentation* will frequently continue some weeks, giving rise to the deposition of (1) free uric acid; (2) acid urates (chiefly sodium urate); (3) calcium oxalate. In a few weeks, or often much sooner, the urea becomes alkaline, or *alkaline fermentation* is established, in consequence of the urea being converted into ammonium carbonate. The urine now becomes paler, while the red or yellow crystals of uric acid are replaced by white amorphous granules and colorless refracting prismatic crystals. In other words, the former precipitate is replaced by (1) ammonium and magnesium phosphate; (2) calcium phosphate; (3) ammonium urate. In certain forms of disease these changes take place much more rapidly; and the second change—the alkaline fermentation—may occur without a pre-existing acid fermentation and even within the bladder. In addition to the above-named substances, which arise from decomposition of healthy urine, others occur in various morbid conditions of the system; and we may divide the urinary sediments generally into the two great groups: (1) the unorganized, (2) the organized deposits. The unorganized sediments include uric acid, the urates (chiefly sodium urate), hippuric acid, calcium oxalate, earthy phosphates (viz., calcium phosphate and ammonio-magnesium), cystine, xanthine, hypoxanthine or sarcine (formerly known as guanine), and tyrosine; while the organized sediments include mucus and epithelial scales, blood corpuscles, pus corpuscles, cancerous and tubercular matter, fibrinous casts of the tubes of the kidney, spermatozoa, fungi, infusoria, etc. Of the unorganized sediments, uric acid, the urates (excepting ammonium urate), hippuric acid, and cystine occur only in acid urine; and ammonium urate, ammonio-magnesium phosphate, and calcium phosphate, in alkaline or neutral urine. Oxalate and the organized sediments occur both in acid and alkaline urine; but alkaline urine is the more natural *habitat* for fungi and infusoria. It is comparatively seldom that a sediment consists of a single ingredient. For details regarding the mode of treatment indicated by the most important of the sediments, see Lithic Acid Diathesis: Oxaluria: Phosphatic Diathesis.

URINE, n. *ū'rĭn* [F. *urine*—from L. *urīna;* Gr. *ouron*, urine: akin to Skr. *vari*, water: Icel. *ur*, drizzling rain]: a fluid secreted by the kidneys and accumulated in the bladder, from which it is discharged. **Urinal**, n. *ū'rĭ-năl*, a vessel in which, or a place where, urine may be discharged; an erection in a street for public convenience. **U'rina'rium**, n. *-nā'rĭ-ŭm*, a place where urine may be stored for manure. **U'rinary**, a. *-nėr-ĭ*, relating to or found in urine: N. a place for storing urine. **U'rinate**, v. *-nāt*, to void or discharge urine. **U'rinating**, imp. **U'rinated**, pp. **Urination**, n. *ū-rĭ-nā'shŭn*, the act of discharging urine. **U'rinative**, a. *-nā-tĭv*, inducing the discharge of urine. **U'rinator'idæ**, n. *-tŏr'ĭ-dē:* family of pygopodous birds, i.e. of carinate birds, web-toed, with legs inserted far behind the middle. **U'rinif'erous**, a. *-ĭf'ėr-ŭs* [L. *fero*, I bear]: conveying urine. **U'rinip'arous**, a. *-ă-rŭs* [L. *parĭō*, I produce]: producing urine. **U'rinom'eter**, n. *-ŏm'ĕ-tėr* [Gr. *metron*, a measure]: an instr. for determining the density of urine. **U'rinous**, a. *-nŭs*, or **U'rinose**, a. *-nōs*, pertaining to urine.

U'RINE: fluid secreted or separated by the kidneys from the blood; the principal means of removing the worn-out tissues, especially the nitrogenous and saline matters, from the system. It is very complex in composition, varying considerably in different classes of animals, and mainly in accordance with the nature of the food.

Healthy human U., freshly discharged, is a clear fluid of bright amber color, bitter saltish taste, and peculiar aromatic odor. Its normal reaction is acid, and its specific gravity ranges from 1·015 to 1·025. It is computed that an adult man of ordinary weight (about 154 lbs.) secretes in 24 hours about 52 fluid ounces (rather more than two pints and a half) of U., the range extending from 40 to 70 ounces; and that these 52 ounces yield, on evaporation, 935 grains of solid constituents, the remainder being water, which is expelled by heat. Of these 935 grains, 520 (or more than an ounce) are composed of Urea (q.v.), and 266 of chloride of sodium (or common salt): while the remaining 149 grains are made up of Uric Acid (q.v.); Hippuric (q.v.) acid; sulphuric acid, 32 grains; phosphoric acid, 54 grains; earthy phosphates, 15 grains; ammonia (in the form of hydrochlorate), 11 grains; with smaller quantities (in most cases mere traces) of Creatinin (q.v.) and Creatin (q.v.), xanthine, hypoxanthine, coloring matters, mucus (from the walls of the bladder), iron, silica, and fluorine. The fluid holds also an undetermined quantity of gases (carbonic oxide and a little nitrogen) in solution. The most characteristic and important of these ingredients is the *urea*, the daily excretion of which is modified by various circumstances. On a purely animal diet, Lehmann found that he secreted two-fifths more urea than on an ordinary mixed diet; on a mixed diet, almost one-third more than on a purely vegetable diet; on a non-nitrogenous diet, the amount of urea was less than half the quantity secreted during a mixed diet. The free use of common salt increases the daily excretion of urea, in consequence, doubtless, of its augmenting the rapidity of the destructive action always going on in all the tissues; while alcohol, tea, coffee, and tobacco (smoked or chewed) diminish the daily quantity. The only medicine which increases its quantity to any marked degree is *Liquor Potassæ.* The daily quantity is increased in many diseases (typhoid fever and many other acute diseases, especially inflammation of the membranes of the brain), while in Bright's disease and a few other disorders it is diminished. The daily amount of excreted *uric acid,* like that of urea, varies with the nature of the food. Prof. Haughton found that the mean daily quantity of uric acid excreted by meat-eaters and wine-drinkers was 4·5 grains, while vegetarians yielded an average of only 1·48 grains, part of which, moreover, was hippuric acid. As an excess of uric acid is likely to give rise to gravel or stone, it should be generally known that the free ingestion of water diminishes its excretion, while at the same time it increases the amount of urea, into which the uric acid is probably transformed by oxidation. The daily amount is diminished by strong bodily exercise, and increased by repose—the reverse of the effects in relation to the urea. The amount is increased when the digestive functions are disturbed, as after the use of indigestible food or excess of alcoholic drinks; in conditions of the system which are associated with much disturbance of the functions of respiration and circulation; and in disorders accompanied with severe febrile symptoms, such as acute rheumatism. Its entire absence seems compatible with perfect health. With regard to *hippuric* acid, there has been much discussion, not only as to the quantity in which it occurs, but as to whether it actually exists in healthy U. Thus, Weissman, German chemist, found that on a mixed diet he secreted more than 40 grains of this acid daily, and on a purely animal diet only 12 grains. Duchek and Höfle deny that it is a constant ingredient of healthy human U.; and Prof. Haughton met with it only once in the U. of ten men. Dr. Bence Jones, a very trustworthy chemist, found that a man, A, weighing 152 lbs., and a man, B, weighing 202 lbs., living on a mixed diet, excreted daily, on an average, 4·9 and 6·5 grains of hippuric acid, the corresponding quantities of uric acid being 7·7 and 12·6 grains. In cases of jaundice, no traces of hippuric acid are present, even after the administration of benzoic acid, which is usually converted in the system into hippuric acid. Hence it may be inferred that a healthy condition of the U. is essential to the formation of this acid in the system. Nothing is known with certainty regarding the diseases in which this acid is secreted to excess. The only other characteristic ingredient of the U. is its *coloring matter*. Prof. Harley believes that he has isolated the normal urine-pigment, to which he applies the term *urohæmatin;* and from its always containing iron, and on other grounds, he regards it as modified hæmatin or blood-pigment. It has been shown also that indigo-blue, in very small quantity, is almost always present.

The acid reaction presented by fresh healthy human U. depends mainly on the presence of acid phosphates of the alkalis and earths, though the presence of free acids, such as free hippuric or possibly lactic acid (which, however, is not a normal ingredient), may occasionally contribute to increase the acidity. To determine the acidity of the collective 24 hours' U., take a solution of oxalic acid of known strength, and ascertain the relative quantities of a solution (of definite strength) of caustic soda required to neutralize equal volumes of the U. and of the oxalic acid solution. In this way it is found that the total quantity of free acid in the daily U. of a healthy man corresponds in neutralizing power to about 36 grains of oxalic acid. The degree of acidity varies in different parts of the day. The respective acidities of the secretions of the kidneys and stomach are considered to stand in an inverse relation to one another; so that the U. thus loses its acidity, and may even become alkaline during stomachal digestion. It has been found that the effect of a meal on the acidity of the U. begins to show itself in the second hour afterward, is most marked during the next three hours, and disappears by the end of the sixth hour, the fluid being almost always positively alkaline during the third and fourth hours. Independently of this periodic alkalinity, the U. may be made alkaline at will by administration of caustic alkalis, their carbonates or their salts, with organic acids (citrates, tartrates, etc., such as occur in many fruits); while after administration of acids the acidity is much increased.

In disease the U. may contain either only its ordinary ingredients in abnormal proportions, or ingredients not occurring in the healthy fluid. Thus, there may be excess or diminution of urea; excess of uric acid; diminution of chloride of sodium, which, in cases of inflammation of the lungs, may fall from 266 grains to a mere trace, and, by its daily diminution or augmentation, tells with certainty whether the disease is gaining or losing ground; an excess of coloring matter or of mucus, etc.: or, on the other hand, the U. may contain albumen, sugar, oxalic acid (in combination with lime), fat, leucine and tyrosine, bile-pigment, biliary acids, etc. The subject of 'the urine in disease' is too wide for its details to find space here.

As to the U. of mammals generally, that of the Carnivora is clear, of light-yellow color, disagreeable odor, nauseous taste, and acid reaction: it contains much urea, little pigment, and little or no uric acid. The U. of the Herbivora is turbid, yellow, of less unpleasant odor, and alkaline. In addition to urea, it contains hippuric (but no uric) acid, alkaline lactates, carbonates of potassium and of the earths, calcium oxalate, and a small quantity of phosphates. By reversing the natural food of these classes, we reverse the characters of the urine.

The U. in many forms of disease becomes turbid on cooling, and soon deposits a sediment; and even healthy U., after a few days' exposure to the air, loses its clearness, and throws down a deposit of mucus and various kinds of crystals. The investigation of the nature of the deposits thrown down by comparatively fresh U. in disease is of the highest importance in medicine: see URINARY SEDIMENTS.

U'RINE, INCONTINENCE OF, or ENURE'SIS: troublesome disorder, far more common in childhood than later in life. The child affected—perhaps with no other bad symptoms—is in the habit of discharging urine in bed during sleep, usually without being wakened by the act. This may take place once or several times during the night, and sometimes there is an interval of a night. The habit may often be broken by proper domestic management, as by withholding any excess of fluids before going to bed, and by waking it and making it discharge the contents of the bladder when the elder members of the family retire to bed. If such means fail, recourse must be had to medical advice. Blisters to the sacrum, which prevent the patient from lying flat on the back, and consequently prevent the urine from gravitating toward the most irritable part of the bladder, are often useful; and cold douches to the spine, with internal use of chalybeates, are frequently serviceable. The most certain remedy, however, is extract of belladonna, to be given only under medical advice. Any attempt by mechanical pressure to prevent the passage of the urine is to be utterly reprobated.

URME'A, or **URUMI'A**: see **OROOMIAH**.

URN, n. *érn* [F. *urne*—from L. *urna*, a water-pot, a vessel for drawing water: It. *urna*]: a vessel of a roundish form bulging out or swelling in the middle and having a foot or feet; a vessel for keeping water hot at table; a Tea-urn (q.v.); a vessel in which the ashes of the dead were kept in anc. times; in *bot.*, the theca or spore-case of mosses. **URNAL**, a. *ér'năl*, of or pertaining to an urn.

URODELA, n. plu. *ū'rō-dē'lă* [Gr. *oura*, a tail; *dēlŏs*, visible, apparent]: in *zool.*, the tailed amphibians, as newts, etc.

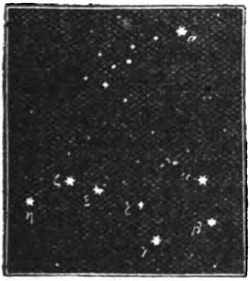
UROGENITAL, a. *ū'rō-jĕn'ĭ-tăl* [Gr. *ouron*, urine, and Eng. *genital*]: connected with, or relating to, the urinary and genital organs.

UROHYAL, a. *ū'rō hī'ăl* [Gr. *oura*, the stern, the tail; and Eng. *hyoid*, which see]: in fishes, a backward process of the hyoid bone.

UROSCOPY, n. *ū-rŏs'kŏ-pĭ* [Gr. *ouron*, urine; *skopĕō*, I view]: the inspection of the urine in diagnosing disease.

URSA, n. *ėr'să* [L. *ursa*, a she-bear, a constellation]: the bear. **URSIDÆ**, n. plu. *ér'sĭ-dē*, the bear-tribe, a family of carnivorous animals (see **BEAR**). **UR'SIFORM**, a. *-faıorm* [L. *forma*, a shape]: having the shape of a bear. **UR'SINE**, a. *-sin* [L. *ursinus*]: pertaining to a bear or resembling it; grizzly.

UR'SA MA'JOR ('the Greater Bear') and **UR'SA MI'NOR** ('the Lesser Bear'): two well-known constellations in the n. heavens.—*Ursa Major* was distinguished in the time of Homer by the names *Arktos*, 'the Bear,' and *Hamaxa*, 'the Wagon,' from a fancied resemblance to these objects. The Roman name Ursa was a translation of the Greek *Arktos*. The seven bright stars of the constellation were called by the Romans *Septemtriones*, 'the seven plowing oxen,' from which, and from their position in the heavens, the adjective *septentrionalis* came to signify north. Throughout Europe the common names of these seven stars are 'the Plow,' 'Charles's Wain,' 'the Wagon;' and in the United States they are more commonly known as 'the Dipper.' When the constellation of Ursa Minor was recognized, *megale*, 'great,' was added to *Arktos* by the Greeks, and *major*, 'greater,' to *Ursa* by the Romans. The group of stars in the hinder part of the Great Bear, being within 40° of the n. pole, never sinks below the horizon of any place of higher latitude than 40° n.—a peculiarity alluded to by Ovid in his *Metamorphoses*. It contains a considerable number of stars, of which 17 are visible to the naked eye; but of these only one (α) is of the first magnitude, two (β and γ) of the second, and eight (among whom are δ, ϵ, ζ, and η) of the third. The accompanying figure shows the arrangement. α and β are known as 'the Pointers,' from their use in indicating the position of the *Pole-star* (q.v.). A line drawn from the Pole-star through η of the Great Bear, and produced its own length, passes close to the first-magnitude star Arcturus.—*Ursa Minor* is less prominent in the heavens. It was also *Arktos* and *Hamaxa* among the Greeks, and *Arctus* and *Ursa* among the Romans, from the close resemblance of its chief star-group to that of Ursa Major; but was distinctively called *Kynosoura* or *Kynosouris*, and *Cynosura*, 'the Dog's Tail,' from the circular sweep, resembling the curl of a dog's tail, formed by three of the stars in it. The third-magnitude star α in the extremity of the tail of the Little Bear, at present the Pole-star (q.v.), is the brightest in the constellation.

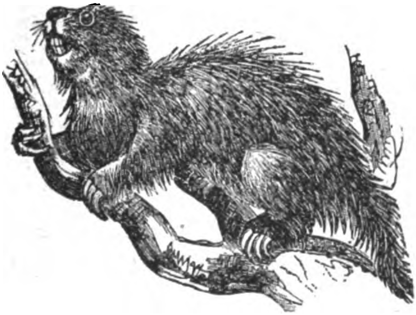


Ursa Major and Ursa Minor.

According to the later mythical stories of the Greeks, Ursa Major was the metamorphosis of Callisto, one of Diana's nymphs, who, having violated her vow, was transformed into a bear, was slain by her son Arcas, and afterward transferred to the heavens as a constellation by Jupiter; Arcas being at the same time metamorphosed into Boötes, the Arktophylax, 'Bear-warden,' of the Greeks. According to another but less common legend, the seven stars of Ursa Major are the oxen of Icarius, and Arktophylax became *Boötes*, 'the Ox-driver.' See Boötes.

UR'SINE DAS'YURE: see Dasyure.

URSON, *ėr'sŏn:* quadruped (*Erythizon dorsatum*) nearly allied to the Porcupine, and often called the Canada Porcupine (see Porcupine). The U. is about the size of a small hare. It is found as far s. as Va. and Ky., and as far n. as lat. 67°. Its quills are dyed by the Indian women, and worked into ornamental articles of various kinds.



Urson (*Erythizon dorsatum*).

URSULA, *ér'sù-lâ*, SAINT: saint and martyr of the Roman calendar, especially honored in Germany, particularly at Cologne (q.v.), the reputed place of her martyrdom. The date of her martyrdom is given variously as 238, 283, and 451. According to the revised edition of the Chronicle of Sigebert of Gemblours (Pertz, *Rerum Germanicarum Scriptores*, VIII., 310), 1106 to 1141. U. was daughter of the Brit. prince Deonatus, and was distinguished for her beauty. Holofernes, son of a powerful heathen king, sought her in marriage, and to this her father was forced to assent. U., however, made it a condition that her suitor should become a Christian, and that she should be allowed three years, during which she proposed to make a voyage of pious pilgrimage, accompanied by 11,000 maidens. The conditions were accepted; the maidens were collected, and after exercising in all kinds of manly sports, the expedition set sail in 11 triremes from the British coast, or, as others say, was, in answer to prayer, wafted off by a sudden breeze. Arriving at the mouth of the Rhine, they sailed up the river to Cologne, thence upward to Basel, where, leaving their galleys, they proceeded by land to visit the tombs of the apostles at Rome. This accomplished, they descended the river to Cologne, which, however, had fallen into the hands of an army of invaders, under the headship of Attila. Landing in Cologne in ignorance of this fact, the pious virgins fell into the hands of these heathens, by whom they were all put to the sword, except U., who, for her beauty's sake, was reserved as a prize for the chief, and another (St. Cordula), who had concealed herself in one of the boats. On the following day she gave herself up; and U., refusing to be separated from her slaughtered companions, was also slain. Heaven, however, interposed. A host of angel warriors smote the cruel Huns; Cologne was again set free; and, in gratitude to their martyred intercessors, the citizens erected a church on the site still occupied by the church now known as St. Ursula. The improbabilities and anachronisms of this legend were early observed. The centuriators of Magdeburg (see MAGDEBURG CENTURIES) exposed its weak points with unsparing severity. On the other hand, a Jesuit father, Crombach, has devoted an entire folio vol. to the vindication of the narrative. Many suggestions have been offered in explanation of its most startling improbability—viz., the alleged number of the martyred victims, 11,000. One of these connects the '11,000' with *Undecimilla*, name of a virgin who was really the companion of U.'s martyrdom. The record of the martyrdom in the calendar thus being 'Ursula et *Undecimilla VV.*,' 'Ursula and Undecimilla Virgins,' was easily mistaken for 'Ursula et *Undecim millia VV.*,' 'Ursula and *eleven thousand virgins*.'

Secular inquiries into the origin of the U. legend deny that it has foundation in any historical facts. They find the first traces of the reverencing of these virgins in martyrologies and missals of the latter half of the 9th c., in which mention is made either of a very small number of virgins whose names are given, or a larger indefinite number without names. After the end of the 9th c. the number 11,000 is found in the calendars. The name of U. does not occur till after the 10th c.; and it was not till the 12th c. that the reverence for U. became predominant over that of the associate virgins. With the 12th c. begins the discovery of the sacred bones. The *ager Ursulinus* was revealed by a vision 1106; and at first single skeletons were raised with great solemnity; but from 1155 the digging up of the field was carried on systematically for nine years, in the course of which thousands of skeletons were found, male as well as female, adults and children, besides coffins, stone tablets with inscriptions, and the like. What the several relics were was revealed to a nun named Elisabeth, then living in the diocese of Trier, to whom the holy martyrs appeared in visions. In this way were identified a pope, an archbishop, several cardinals, bishops, priests, etc. The numerous human remains found in the Ursulan field at the n. side of the city of Cologne have been accounted for by antiquaries by making it out to have been the burying-ground of the ancient Roman *Colonia Agrippina.* The origin of the legend is accounted for by Schade in his work *Die Saga von der Heiligen Ursula* (Han. 1854), on the theory that it is a Christianized relic of old German paganism, in which U. has taken the place of the ancient goddess worshipped by the Scandinavians as Freyja (q.v.), and still remembered by the German people under the names Berchta (q.v.), Hulda (q.v.), etc., and in Sweden by the very title of 'Old Urschel.'

The most learned Rom. Cath. hagiographers—while tracing the origin of the legend to a real historical massacre of a very large number of Christian maidens during the invasion of Attila and soon after the battle of Chalons, 451—are agreed in regarding the details of the narrative, the number, the pilgrimage to Rome, the interposition of the heavenly host, as mere embellishments of the mediæval chroniclers.—See, for the full exposition and vindication of the history, Crombach, *Ursula Vindicata* (fol. Coloniæ 1647); and for a more critical exposition of the historical foundations, Binterim's *Calendarium Eccles. Germ. Colon.* (1824); *Zeitschrift für Phil. u. Kathol. Theologie* (1850); Kellerhoven, *La Légende de Sainte-U.* (1862).

URSULINES, n. plu. *ėr'sū-līnz:* in the *Rom. Cath. Chh.*, a religious order of women, founded in honor of St. Ursula (q.v.) in the first half of the 16th c. by St. Angela Merici, who formed at Brescia an association of young women bound by vow to tend the sick, instruct children, relieve poverty, and engage in similar works of charity. After a time, a rule, in 25 chapters, was projected by Angela, and finally approved by the bp. of Brescia, Cardinal Francis Cornaro. Angela was chosen as the first superior 1537, the community even then numbering 76 sisters. During the lifetime of Angela, and for more than 20 years after her death, 1540, the congregation was confined to the diocese of Brescia; but 1565 a house was opened at Cremona; and with approval of Popes Gregory XIII. and Clement VIII., the order was spread over many dioceses of Italy. It was warmly encouraged by St. Charles Borromeo (q.v.), and, at his death there were 28 convents of the order in his diocese. Soon afterward it was established in France, where the sisters first formally added to their religious vows the instruction of female children—which has been their chief characteristic. The order was introduced into Savoy by St. Francis de Sales 1635; and 1639 a convent was opened in Quebec, Canada; at Vienna 1660, and at Freiburg, Kitzingen, and Prague soon afterward. The Ursuline sisters have several educational establishments in Ireland, in England, and in the United States. To the U. belongs the honor of having been mainly instrumental in maintaining among Rom. Catholics the education of girls of the higher order through the 17th and 18th c. In this work they have found many competitors among the younger sisterhoods of modern times.—See *Journal des Illustres Religieuses de l'Ordre de Sts. Ursule*, 4 vols. 4to (1690); *Chroniques de l'Ordre des Ursulines*, 2 vols. (Paris 1676).

URTICACEÆ, *ėr-tĭ-kā'sē-ē:* natural order of exogenous plants, consisting of trees, shrubs, and herbs, natives of almost all parts of the world. According to many botanists, U. includes about 600 known species: others restrict it by separating from it several distinct orders, reducing the species to about 300, of which the common nettle may be regarded as the type. The leaves are alternate, furnished with stipules, and generally very rough, sometimes with stinging hairs. The inflorescence is various; the perianth usually divided, but sometimes a mere scale; the stamens inserted into the perianth, equal in number to its segments when it is divided, and inserted at their base; the ovary free, one-celled, containing a single ovule. The fruit is a kind of nut, surrounded by the persistent and sometimes fleshy perianth, sometimes winged. Under this are comprehended *Cannabinaceæ* (q.v.), *Ulmaceæ* (q.v.), *Moraceæ* (q.v.), and *Artocarpaceæ* (q.v.), as well as the restricted U., which have filaments curved in bud, and turning backward elastically when the anthers are bursting, the fruit an unopening nut. The juice of the restricted sub-order *Urticeæ* is watery, not milky; the wood in the arboreous or shrubby species, all tropical, is remarkably soft and light. The fibre of the bark of some is valuable. It is among the restricted U. that species covered with stinging hairs are found. See BŒHMERIA: NETTLE: NEILGHERRY NETTLE: PELLITORY: HEMP: HOP.

URTICACEOUS, a. *ėr'tĭ-kā'shŭs* [L. *urtīca*, a stinging nettle—from *uro*, I burn]: having the character of a nettle. UR'TICAL, a. *-kăl*, pertaining to or allied to the nettles. UR'TICA'RIA, n. *-kā'rĭ-ă*, Nettle-rash (q.v.); a transient inflammation of the skin, characterized by the eruption of small, round, oval-like elevations of a whiter or redder tint than the healthy skin. UR'TICATING, a. *-kā-tĭng*, stinging, as a nettle. UR'TICA'TION, n. *-kā'shŭn*, stinging, as that of a nettle; the process of stinging with nettles.

URUGUAY, *ó-rô-gwī′* or *ū′rô-gwā*, or **Ban′da Oriental′ del Uruguay′** (*lit.*, 'Eastern Bank of the Uruguay'): small republic of S. America; bounded n. and n.e. by Brazil, e. and s.e. by the Atlantic, s. by the Rio de la Plata, w. by the Uruguay river; extent of the n. frontier 450 m., Atlantic seaboard 120 m.; 73,185 sq. m.; pop. (1890) 706.524. In the s., all along the Rio de la Plata and as far n. as the Rio Negro, the country is a sort of terraced upland, with bold, broken, treeless coast-line, with some excellent harbors; while the shores facing the Atlantic are low and sandy. Further e. rises a woody plateau; but high, bare, grassy plains, traversed by ranges of low hills, seem predominant. The climate is temperate, air pure, and winters mild; rain falls copiously in winter, but is rare in summer. The most important rivers are the Rio Negro, Daiman, Queguay, Yaguaron, and Cebollati. Agriculture is in a backward state, though the soil is naturally rich. Small quantities of wheat, maize, barley, rice, peas, beans, flax, hemp, and cotton are raised, and fruit-trees thrive; but the wealth of the country is in its excellent pasturage, which supports great herds of horned cattle, horses, and sheep. In 1885 there were 38,750,406 acres in pasture; 20,000,000 sheep; 8,000,000 cattle; and 1,800,000 horses and mules. The wool of U. is of superior quality, and the product 1889 aggregated 42,000,000 lbs. The wild animals are the tapir, deer, ounce, monkey, paca, rabbit, and fox; and large packs of wild dogs infest the plains. U. has almost no manufactures. The chief exports are wool, jerked and salted beef, beef extract, tallow, hides, horn, and hair: chief imports, woolen goods, household furniture, sugar, cordage, agricultural implements, timber, etc. In 1889 the imports were valued at $32,359,552; exports $29,085,518; total trade $61.445,070. The foreign and domestic debt 1890, Jan. 1, aggregated $81,020,801. Nearly all the imports and exports pass through Montevideo (q.v.), the capital. Other towns of note are Maldonado, Paysandu, and Colonia (see Colonia do Santissimo Sacramento).

U. was originally colonized by Spanish settlers from Buenos Ayres, on the other side of the La Plata; but the territory which forms the natural limit of Brazil on the s. was claimed by Portugal, and war between the two nations for its possession ended in favor of Spain. U. was attached to the viceroyalty of Buenos Ayres, and received the name *Banda Oriental*—i.e., the country on the 'eastern bank' of the Uruguay. Its independence was secured by treaty 1828, when it took the title *Republica del Uruguay Oriental*. Like most of the S. Amer. republics, it has suffered from incessant internal discords. The general features of the constitution of 1830 are in force. The executive authority is vested in a pres., and the legislative in an assembly of (1888) 19 senators and 53 representatives.

URUGUAY, *ô-rô-gwī'* or *ū'rô-gwā*, **River**: stream having its sources in the Sierra do Mar, state of Santa Catarina, Brazil; in s. lat. 28°, w. long. 50°. First it flows w., separating the two states Rio Grande de Sao Pedro and Sao Paulo; then taking a s. course, it forms the boundary between Brazil and the Argentine state of Corrientes; from s. lat. 80°, w. long. 58°, it separates Uruguay from Corrientes and Entre Rios, falling into the Rio de la Plata at the head of its estuary. Its length is 1,000 m.; it is navigable for steamers from its mouth to the Great Falls (Salto Grande), 250 m.; above the Falls the U. is navigable for vessels of not more than 5 ft. draught. The U. is subject to great and sudden rises; and its Sep. and Oct. rise is 20 ft. on the average.

URUMTSI, *ô-rôm'tsē:* city of s. Dzungaria (q.v.), in a fertile district at the n. base of the Thian-Shan (q.v.) Mts. U. has large trade with the adjoining regions.—Pop. about 150,000.

URUS, n. *ū'rŭs* [L. *urus*—from OHG. *ur*, a bison: It. *uro:* F. *ure*]: animal of the ox kind, which anciently inhabited the forests of central Europe, and is described by Cæsar (*Bell. Gall.* VI. 28) as common in the great Hercynian Forest. The U. is described by Cæsar as of elephantine size, and of great strength, swiftness, and fierceness. He states that the horns were very different from those of the oxen of Italy—large, spreading, and sharp. This character is found in the wild cattle of Chillingham and other parks in Great Britain, and in some Highland breeds of oxen; and it seems probable that the U. was the wild original of the domestic ox, and not a bison, nor any now extinct species, as some authors maintain. See monograph by Storer on the *Wild Cattle of Great Britain* (1879).

URVASÎ: see Pururavas.

US, pron. *ŭs* [AS.]: the obj. case of the pronoun *we*.

USAGE, *ū'zāj*, in Law: any practice generally adopted among law-abiding citizens, merchants, traders, etc., which is not contrary to law. In construing the laws of trade, contracts, etc., courts take cognizance of 'known, certain, uniform, reasonable' U. as a means of determining the true intent of parties, the nature and extent of contracts, etc.

USBEGS, *ŭs'bĕgs*, or Uz'beks: people of Turkish race, who, at the close of the 15th c., invaded and conquered the numerous principalities into which Turkestan was divided, and have ever since maintained dominion over the country. At the present day they are mostly a settled people, scattered over Russian, Independent, and Chinese Turkestan, occupied chiefly in agriculture and trade. The most probable supposition regarding their origin is that they came from Kiptchak (q.v.), and assumed the name of U. from Usbeg, one of their chiefs. The U. of Khiva, Bokhara, Khokan, and of Chinese Turkestan, differ greatly in language, manners, and customs. Those of Khiva speak a dialect of the Turkish, are honest and generous, and, free from the treachery and duplicity so characteristic of oriental civilization, are fond of music and poetry; and, though zealous Mohammedans, retain many of their ancient heathen usages. They pride themselves on the purity of their Usbeg descent, but most of them show traces of admixture of Iranian blood. The U. of Bokhara have become largely mingled with the Tajiks, and have consequently lost many of their national characteristics. Those of Khokan are very different from the others, and are as much Kirghis, Kiptchaks, and Kalmucks as they are U.—The fact that the U. have been the dominant race in Turkestan for more than 350 years has given the name such a prestige of nobility and good-breeding that it is generally assumed by such members of other races as settle in cities.

USE, n. *ūs* [L. *usus*, use, employment, practice; *usus*, used; *utor*, I use: F. *us;* It. *uso*, use, usage]: act of employing in any manner; state of being converted to any purpose; occasion or need to employ; the quality which makes a thing proper for a purpose; benefit; advantage; habit; custom; in *law*, profit; benefit; in *OE.*, common occurrence; usury; interest paid for money. Use, v. *ūz* [F. *user*—from mid. L. *usūrĕ*, to use]: to employ; to apply or handle for some purpose; to consume; to accustom; to render familiar by practice; to inure; to be accustomed; to be wont; to treat; to practice; to frequent. Using, imp. *ū'zing*. Used, pp. *ūzd*. Usable, a. *ū'ză-bl*, that can be used. Usage, n. *ū'zāj*, a series of actions done by one person toward another which affect him for good or evil; treatment; custom; practice; habit; manner of using, as a word or phrase. Usance, n. *ū'zăns*, the period after date allowed by custom for the payment of bills of exchange drawn on some distant place; owing to improved means of communication, the tendency is to shorten this period, and usance now runs commonly from 14 days to 4 months; in *OE.*, proper employment; interest. Useful, a. *ūs'fûl*, conducive to a good end; suited or adapted to the purpose; profitable; serviceable. Use'fully, ad. *-lĭ*. Use'fulness, n. *-nès*, the state or quality of being useful. Use'less, a. *-lĕs*, worthless; fruitless; unavailing; ineffectual. Use'lessly, ad. *-lĭ*. Use'lessness, n. *-nĕs*. the state or quality of being useless. User, n. *ū'zér*, one who uses. Usual, a. *ū'zhû-ăl*, customary; such as ordinarily occurs. U'sually, ad. *-lĭ*, commonly. U'sualness, n. the state of being usual. In use, in employment; in customary practice. Use and wont, the common or customary practice. Use-inheritance, inheritance of the effects of use or of disuse in organisms. To use up, to leave nothing of; to exhaust; to tire out thoroughly.—Syn. of 'use, n.': convenience; help; practice; habit; usage;—of 'usefulness': utility; serviceableness; value; advantage; benefit; profit.

USE, in Law: the old name for *Trust* (q.v.). Uses and trusts correspond to the *fidei commissum* of the Roman law. A use was a confidence reposed in another who was tenant of the land, or *terre-tenant*, that he should dispose of the land according to the intention of the *cestui que use*, or him to whose use it was granted, and suffer him to take the profits.

USEDOM, *ô'zeh-dom:* island belonging to Prussia: at the mouth of the Oder and with the island of Wollin shutting off Stettiner-Haff from the Baltic. It is of very irregular shape, being much indented by branches of the Haff; is 34 m. in extreme length, and 15 m. broad; about 206 sq. m. On its n.e. side is the port of Swinemünde (q.v.); on the s.w. side is the small town of U.—Pop. of island 30,000; of town (1885) 1,825.

USE AND OCCUPATION, in Law: technical name for the beneficial enjoyment of premises by a tenant who occupies the real property of another. In all cases where a person has had use and occupation of another's premises, with the assent of the owner, an action lies for the value thereof, which value corresponds to rent under an ordinary lease. Hence, where it is doubtful whether there has been a valid lease executed between the parties, the landlord can recover rent under the head of *use and occupation.*

USHANT, *ŭsh'ant* (F. *Ouessant*): island in the Atlantic Ocean, belonging to France, and included in the dept. of Finisterre, from whose w. coast it is distant about 17 m. It is the largest of a small group of islets called *Iles d'Ouessant,* and has 7 sq. m. The coasts are escarped and difficult of access; the soil is fertile. The inhabitants are employed in fishing, and in rearing cattle and horses. —Pop. (1886) 2,307.

USHAS, *û'shas* [from Skr. *ush,* 'to shine, to burn,' and kindred with the Greek *ēōs* or *heōs* and the Latin *aurora,* 'the Dawn']: one of the female deities of the Vedic religion of India (see INDIA—*Religion*), and among these is invoked with special predilection by the poets of the R'igveda hymns. U. is one of the most pleasing goddesses of the ancient Hindu pantheon. She is frequently addressed as 'the daughter of heaven,' 'the daughter of night' (night being the precursor of the dawn). She is sister of the two luminous deities *Bhaga* and *Varun'a,* and faithful wife of *Sûrya,* the sun. Another god who originally on physical grounds is associated with Ushas is *Indra* (q.v.), ruler of the bright firmament. She is associated also with Soma (q.v.).

USHER, n. *ŭsh'ėr* [OF. *ussier*—from L. *ostiārius,* a door-keeper—from *ostium,* a door: It. *usciere*]: an official who introduces strangers to a presence-chamber or who walks before a person of rank; a person who meets people at the entrance of a hall, church, theatre, or the like, and escorts them to seats; an inferior officer in some English courts of law; a subordinate teacher in a school: V. to give entrance to; to accompany and introduce; to introduce. USH'ERING, imp. USH'ERED, pp. *-ėrd.* USH'ERSHIP, n. the office of an usher. USHER OF THE BLACK ROD, an officer of the order of the Garter (q.v.), who is first gentleman usher of the court in Great Britain, and thus one of the chief officers of the house of peers. The rod from which his title is derived is 3½ ft. long, of ebony, mounted with gold. It is one of the functions of the gentleman usher of the black rod, or of his deputy, known as the yeoman usher of the black rod, to request the attendance of the commons in the house of lords when the royal assent is to be given to bills by the sovereign or by lords commissioners; also to execute orders of commitment for breach of privilege and contempt, and to assist at the introduction of peers, and other ceremonies of the upper house. **USHER OF THE GREEN ROD**, one of the officers of the order of the Thistle (q.v.), whose duties consist in attendance on the sovereign and knights assembled in chapter, and at other solemnities of the order. The rod is of green enamel, 3 ft. in length, ornamented with gold.

USH'ER, JAMES, D.D.: scholar and prelate, Bp. of Meath, and Abp. of Armagh: 1580, Jan. 4—1656, Mar. 21; b. Dublin; of one of the oldest Anglo-Irish families. His uncle, Henry U., preceded him in the archbishopric of Armagh. At the age of 13 U. entered Dublin College, where his predilection for history soon revealed itself. Having resolved to enter the priesthood, he proceeded to read up the entire literature of ecclesiastical antiquity—a task which occupied him from his 20th to his 38th year. He was ordained deacon and priest 1601, and was soon appointed preacher at Christ Church, Dublin. In 1607 he was chosen to the chair of divinity, and filled it for 13 years. In 1609, in one of his visits to England, he made the acquaintance of the most distinguished scholars of the age. In 1613 he published *De Ecclesiarum Christianarum Successione et Statu*, designed to be a continuation of Bp. Jewel's *Apology*. The work was in three parts, of which only the first, reaching to Hildebrand, and part of the second, were finished. At a convocation of the clergy at Dublin, 1615, he was appointed to draw up a series of articles (the number amounted to 104) relating to the doctrine and discipline of the Irish Prot. Church. In these the doctrines of predestination and reprobation (of which U. was an unflinching apologist) found prominence. These views, and others—e.g., that bishops were not an *order* different from presbyters, that the 'Sabbath' should be strictly enforced, that no toleration should be granted to Rom. Catholics—laid him open to a charge of Puritanism; but as his loyalty to the principle of monarchy was undoubted, he suffered no diminution of royal favor: on the contrary, King James promoted him to the bishopric of Meath 1620; and 1623 constituted him a privy councilor of Ireland. Two years later he was made abp. of Armagh, and in his official capacity vigorously opposed the toleration of popery and the spread of Arminianism. In 1632 U. pub. *Veterum Epistolarum Hibernicarum Sylloge*, a collection of letters from anc. MSS., on the state of the Irish Church 592-1180; *Emmanuel, or a Treatise on the Incarnation of the Son of God* (1638); *Britannicarum Ecclesiarum Antiquitates* (1639), said to contain a most exact account of the British Church, from the first planting of Christianity, 20 years after the crucifixion, to the end of the 7th c.; *The Judgment of Dr. Reynolds concerning the Original of Episcopacy Defended, The Original of Bishops. The Power of the Prince and the Obedience of the*

Subject, etc. (1641). When the civil war broke out, U., who was in England, espoused the side of the king, was offered a seat among the Assembly of Divines at Westminster, but declined it, and made himself very obnoxious to parliament by his sermons at Oxford. When the fortunes of the king began to decline, U. left Oxford; his property and revenues in Ireland were seized, and, after a residence in Wales and elsewhere, he went to London 1647, where, in spite of his royalist sympathies, he was chosen by the benchers preacher of Lincoln's Inn, a post which he retained till his death. Cromwell, who had great respect for his learning, ordered his remains to be interred with great magnificence in Erasmus's Chapel, Westminster Abbey.—U. was a man of undoubted ability and of enormous erudition, the most learned prelate that ever adorned the Irish Prot. Church, pious and free from worldly ambition; but he lacked force of character, real insight and intellectual power; hence, though pronounced by Dr. Johnson 'the great luminary of the Irish Church,' he exercised less influence over the course of contemporary events than some of the humblest of Cromwell's Ironsides. Besides those already mentioned, U.'s chief works are: *De Romanæ Ecclesiæ Symbolo* (1647); *Dissertatio de Macedonum et Asianorum Anno Solari* (1648); and *Annals of the Old Testament* (1650–54), a chronological work. After his death there were pub. (from his numerous MSS.), *Chronologia Sacra*, etc. (Oxford 1660), by which and his *Annals* he is most widely known; a volume of *Sermons; Historia Dogmatica Controversiæ inter Orthodoxos et Pontificios de Scripturis et Sacris Vernaculis* (Lond. 1690); *A Collection of three hundred Letters written to James Usher, Lord Archbishop of Armagh*, to which is prefixed a life of the abp. by his chaplain, Richard Parr, D.D. (Lond. 1686). A collected ed. of U.'s works, by Elrington & Todd, in 17 vols., with a new biography, was pub. Dublin 1847–64. U.'s *chronology* of the biblical history, long the standard in Great Britain and the United States, and often printed on the margins of Bibles, is purely arbitrary, and is of no authority among modern scholars for periods in remote antiquity.

USKUP, *ôs'kŭp*, or Us'KUB, or SCOPIA, *skō'pi-a* (Servian *Skoplie*): town of European Turkey, cap. of vilayet of Kossova, on the Vardar, 160 m. n.w. of Salonica. It is on hilly ground; and contains 16 mosques, with black domes and minarets, interspersed among fruit-trees. Here are the ruins of an ancient Roman aqueduct of 55 arches. The inhabitants are engaged in leather-making, weaving, dyeing, orcharding, etc.—Pop. 28,000.

USNEA, *ŭs'nē-a:* genus of lichens having a much-branched thallus, with an elastic thread in the centre. They grow on trees, are generally pendulous, and contain the vegetable principle *Usnine*, which is found also in many other lichens. They are sometimes used in dyeing, like archil and cudbear. From their appearance, many of the species of U. receive the popular name BEARD-MOSS.

USQUEBAUGH, n. *ŭs'kwĕ-baw'* [Gael. *uisge-beatha*, lit., water of life]: a strong distilled spirit, slightly aromatic, made in Ireland and Scotland; whisky.

USTILA'GO: see Smut.

USTULATE, a. *ŭs'tū-lāt* [L. *ustulātus*, pp. of *ustulārĕ*, to scorch—from *urĕrĕ*, *ustum*, to burn]: in *bot.*, blackened as if burned. Us'tula'tion, n. *-lā'shŭn*, the roasting or drying of moist substances to prepare them for pulverizing; the burning of wine.

USUAL: see under Use.

USUCAPTION, n. *ū'zū-kăp'shŭn* [L. *usucaptus*, pp. of *usucapĕrĕ*, to acquire ownership of a thing by long use—from *usus*, use; *capĕrĕ*, to take]: in *civil law*, the title or right to property acquired by the uninterrupted and undisputed possession of it for a certain time.

USUFRUCT, n. *ū'zū-frŭkt* [mid. L. *usufructus*—from L. *usus*, use; *fructus*, fruit: F. *usufruit*]: in *law*, the right of using and enjoying the profits of a thing belonging to another without impairing the substance or without alienating it; Liferent (q.v.). U'sufruc'tuary, n. *-tū-ėr-ĭ*, one who enjoys usufruct over anything: Adj. of or pertaining to usufruct.

USURER, USURIOUS, etc.: see under Usury.

USURP, v. *ū-zėrp'* [F. *usurper*—from L. *usurpārĕ*, to seize to one's own use—from *usus*, use; *rapĭō*, I seize: It. *usurpare*]: to seize and hold by force and without right; to assume improperly; to arrogate; to appropriate. Usurp'ing, imp. Usurped', pp. *-zėrpt'*. Usurp'er, n. *-ėr*, one who occupies the power or property of another without right. Usurpation, n. *ū'zėr-pā'shŭn* [F.—L.]: seizure and possession without right—applied particularly to the taking possession of a throne or sovereignty. Usurpatory, a. *ū'zėr-pă-tėr-ĭ*, marked by usurpation. Usurp'ingly, ad. *-lĭ*.

USURY, n. *ū'zhū-rĭ* [F. *usure*, usury—from L. *usūră*, use, interest, usury—from *usus*, pp. of *utor*, I use: It. *usura*]: an illegal or very exorbitant rate of interest for money lent; the practice of taking exorbitant interest for money lent (see Interest); in *OE.*, interest. U'surer, n. *ū'zhėr-ėr*, one who lends money at an illegal rate of interest; one who charges an exorbitant rate of interest; in *OE.*, a money-lender. Usurious, a. *ū-zhō'rĭ-ŭs*, taking an exorbitant rate of interest for money. Usu'riously, ad. *-lĭ*. Usu'riousness, n. *-nĕs*, the state or quality of being usurious. Usuring, a. *ū'zhū-ring*, in *OE.*, of or pertaining to money-lending.

UT, n. *ŭt:* among the *French*, the first note of the musical scale, called by other nations *do*.

UTAH, *ū'tâ:* state; one of the United States of America; 45th in order of admission into the Union. 32d under the federal constitution; created a state from the terr. of U., and admitted 1896, Jan. 4; named from the Utah or Ute tribe of Indians (see UTES).

Location and Area.—U. is in lat. 37°—42° n., long. 109°—114° w.; bounded n. by Ida. and Wyo., n.e. by Wyo., e. by Colo., s. by Ariz., w. by Nev.; extreme length 345 m., extreme breadth 275 m., water surface 2,780 sq. m., land surface 82,190; total 84,970 sq. m. (54,380,800 acres); greatest elevation 13,500 ft. above sea-level (Mt. Tohkwano and Hayden Peak); cap. Salt Lake City.

Topography.—The whole state possesses large physical interest. It is divided into two parts by the Wahsatch Mountains, which cross it from n.e. to s.w., the w. part belonging to the Great Basin, with no river outlet to the ocean, and the e. part to the Rio Colorado drainage area. The most striking physical features are the Wahsatch Mts. and the High Plateaus, forming a central zone 9,000—11,000 ft. above sea-level; the Uintah Mts., stretching e. from about the middle of the Wahsatch, a table-land with peaks 12,000—13,500 ft. high; the Tavaputs Table-land, extending from the s. extremity of the Wahsatch e.s.e. beyond the boundary of the state; the Uintah White basin, between the Uintah Mts. and the Tavaputs Table-land, with ample drainage on the e. and w.; the Cañon lands s. of the Tavaputs Table-land and e. and s. of the High Plateaus, where the Green and the Grand rivers unite to form the Rio Colorado, and where there are numerous deep and picturesque cañons, nearly all traversed by streams of considerable size; and the Great Basin, subdivided into the Sevier Lake basin and the Great Salt Lake basin, a region of low valleys w. of the lofty zone, interrupted by spurs of a mountain system extending through Nev. and into Ida. and Or. The region of the Great Basin abounds in lakes, of which the chief are Great Salt Lake, 100 m. long, 50 m. wide, 1,900 sq. m. area, whose waters contain about 22 per cent. of pure salt, and are wholly destitute of fish; Utah Lake, 45 m. s., 130 sq. m., whose waters are fresh and pure; and Sevier, Little Salt, Preuss, and Fish lakes, all further s., and without apparent outlets. Great Salt Lake receives the Bear, Weber, and Jordan rivers, each having several tributaries, and is connected by the Jordan with Utah Lake, which also receives a number of large tributaries from the Wahsatch Mountains, including the Provo, American Fork, Spanish Fork, and Hobble, Payson, and Salt creeks. As far as known the lakes receive all the rivers in the Great Basin region. In the e. part the drainage is chiefly by the Rio Colorado and its tributaries, notably by the San Rafael, Uintah, Dirty Devil, White, Green, Grand, and San Juan rivers. The Great Basin drainage area is about three-fifths and the Rio Colorado area about two-fifths of the whole area; the former is divided into the Great Salt Lake district of 837,660 acres of irrigable land, and the Sevier Lake district of 101,700 acres, and the latter into the Uintah White basin of 280,320 acres and the Cañon lands of 213,440 acres.

Climate.—The mean annual temperature ranges from 48°·65 in the n. to 51°·51 in the s., and 38°—40° e. of the Wahsatch Mountains, and 46°—52° w. The inhabited parts range in altitude 4,300—6,300 ft., but 70 per cent. of the population is settled in valleys scarcely exceeding 4,500 ft., and 60 per cent. in the valleys of Great Salt Lake and Utah Lake, where the air is dry, clear, and pure. The average rainfall is 16 in., excepting in the Great Salt Lake region, where it is 20 in., and rain is most abundant in the valleys Oct.—Apr., the remainder of the year being dry and hot. Spring opens in May, winter generally early in November.

Geology.—Clarence King pronounces the greater part of the rock of the interior mountain area to be a series of conformable stratified beds reaching from the early Azoic to the late Jurassic times. The raising of these beds produced the Sierras, the Wahsatch, and the parallel ranges in the Great Basin. Afterward the Pacific Ocean on the w. and the ocean that filled the Mississippi basin on the e., created a system of cretaceous and tertiary strata. It is observed that all the structural features of the local geology are nearly parallel with the meridian; hence the precious metals are found arranged in parallel longitudinal zones. Maj. Powell believes that the present Great Basin was the first part of the w. to emerge from the sea, that during the whole of the Mesozoic period the basin was drained into a sea which covered the Wahsatch, the Uintahs, and the High Plateaus, and that the Great Plains and the Great Basin were raised to their present altitude at the beginning of the Cenozoic period, where the uplifting of the continent between St. Louis and San Francisco began. For details concerning the physical and geological features of the terr., see the publications of the U. S. Geological Survey. The economic properties are gold, silver, lead, and copper, mined chiefly in Beaver, Juab, Summit, Salt Lake, Tooele, and Washington cos.; coal on both sides of the Wahsatch and the High Plateaus for almost the entire length of the terr., with principal mines in Emery and Summit cos.; brimstone near Cove Creek; antimony along the Sevier river; asphalt and oil with asphalt base (similar to that in Trinidad) on Green river; gilsonite or uintahite, yielding 99 per cent. of asphalt with the oil dried out, on the lower Duchesne and the lower White rivers; rock salt on Salt Creek and common salt on Great Salt Lake; and iron ore in various parts, but particularly in Iron co. The principal forest growths are fir, spruce, pine, cedar, maple, oak, mountain mahogany, and quaking ash.

Mining.—Some attempt at mining was made about

1865, but the lack of facilities of transportation retarded the industry. In 1869 the Union Pacific and the Central Pacific railroads united their tracks on the summit of Promontory Range, and the event gave such an impetus to mining that there were produced 1871–87 ores and bullion of the following values, silver being reckoned at its coining value: gold $3,065,691.72; silver $84,129,668.88: lead $33,799,599.17; and copper $3,003,889.21—total $123,998,848.98. The output 1894 was officially stated as: Copper, 1,066,160 lbs., valued at 5 cts. per. lb., $53,308; refined lead, 202,500 lbs., valued at $3.11 per 100 lb., $6,297.75; unrefined lead, 55,551,663 lbs., valued at $82 per ton, $888,826.60; silver, 6,659,798 fine oz., valued at 62·97 cts. per oz., $4,193,674.80; and gold, 56,427 fine oz., valued at $20 per oz. $1,128,540—total export value $6,327,826.90, or, at mint and seaboard valuations, $11,631,402.72.

Agriculture.—The following comparison of the United States census reports of 1880 and 1890 shows a steady development of the agricultural industry.

Farms.	1880.	1890.	Per cent.
Number of farms	9,452	10,517	+11·3
Acreage of farms	655,524	1,323,705	+101·9
Value of farms	$14,015,178	$28,408,780	+102·7

In 1894, exclusive of two cos. not reporting, there were 20,581 farms, on which $718,929 was expended during the year for buildings and $610,820 for interest and taxes. The irrigated area was 417,455 acres, pasturage fenced 294,725, and improved land 806,650. There were 17,453 farmers free of incumbrance and 2,128 mortgaged for an aggregate of $1,971,352. On the farms 5,960 laborers were employed, to whom $1,015,366 was paid in wages. The subjoined table shows the acreage, yield, and value of the principal farm, orchard, and dairy products in the calendar year 1894, as compared with 1880.

Crop.	1880.		1894.		
	Acreage.	Yield.	Acreage.	Yield.	Value.
Corn	12,007	163,342 bu.	13,843	293,557 bu.	$151,433
Wheat	72,542	1,169,199 "	144,717	3,113,073 "	1,440,096
Oats	19,525	418,082 "	43,334	1,387,710 "	470,658
Rye	1,153	9,605 "	3,791	42,352 "	20,094
Barley	11,268	217,140 "	8,754	271,866 "	100,207
Potatoes	....	573,595 "	13,526	1,649,239 "	522,855
Hay	65,214	92,735 t.	252,799	*586,105 t.	2,456,038
Apples	....	56,633 bu.	6,698	377,935 bu.	146,764
Apricots	....	4,178 "	351	21,234 "	10,372
Peaches	....	69,910 "	1,636	154,772 "	75,152
Pears	....	6,198 "	564	27,261 "	18,832
Plums	....	9,663 "	852	37,810 "	19,835
Sorghum	....	58,221 gal.	....	90,201 "	....
Butter	....	1,052,903 lb.	....	3,441,732 lb.	....
Cheese	....	126,727 "	....	820,747 "	....

* Includes 468,459 tons of lucerne.

UTAH.

The number of animals reported on the farms and ranches 1880 and 1896 was as follows:

Animals.	Number 1880.	Number 1896.	Value 1896.
Horses	38,131	71,897	$902,149
Mules	2,898	1,735	40,865
Milch cows	32,768	57,271	870,519
Oxen and other cattle	62,648	869,374	4,253,114
Sheep	233,121	1,998,441	3,157,537
Swine	17,198	56,021	393,671
Total	386,764	2,555,339	$9,617,855

The wool clip 1880 was 973,246 lbs.; 1894, 12,119,763 lbs.

Manufactures.—The following table gives a comparison of the manufacturing industries in 1880 and 1890; and details of the principal ones, arranged in the order of value of output, in 1890, according to the revised census returns. In 1880 the total capital employed in manufacturing was $2,656,657, and in 1890 $6,583,022.

Principal industries.	Estab.	Hands employed.	Wages Paid.	Cost of materials.	Value of products.
All industries, 1890.	531	4,980	$2,715,805	$4,252,030	$8,911,047
All industries, 1880.	640	2,495	858,863	2,561,737	4,324,992
Increase	*109	2,485	1,856,942	1,690,293	4,586,055
Flour and grist mill products	49	177	94,328	1,160,641	1,468,681
Planingmill products	16	302	240,436	358,374	753,350
Printing and pub.	31	485	855,829	144,382	734,623
Slaughtering and meat-packing	4	74	60,754	457,064	545,200
Brick and tile	40	758	232,458	66,551	421,658
Woolen goods	9	274	104,156	163,864	388,534
Foundry and machine shop prod.	11	159	122,178	100,450	260,237
Lumber mill prod., logs and bolts	30	228	61,756	126,932	234,820
Confectionery	5	80	40,811	100,395	222,990
Salt	9	180	53,858	5,672	144,300
Malt liquors	5	46	25,685	37,206	113,531
Cigars and cigarettes	6	59	44,837	45,637	113,097

* Decrease.

The local census 1894 reported: Number of industrial concerns 880; horse-power employed 11,280; laborers employed 5,054; capital invested $5,476,246; value of plants $5,986,215; paid for wages $2,027,118; paid for raw material $2,610,038; and value of products $6,678,118.

Trade Interests.—A summary of the wholesale and retail trade in the calander year 1894 shows: Number of stores 1,974; capital invested $14,551,345; persons employed 5,023; wages paid $2,685,794; and aggregate sales $32,865,611.

Transportation.—The railroad system 1895, June 30, comprised 543·3 m. of broad gauge and 37 m. of narrow gauge of the Union Pacific road; 484·79 m. of broad gauge and 11·3 m. of narrow gauge of the Rio Grande Western road; 165·5 m. of broad gauge and 41·55 m. of narrow gauge of the Central Pacific; 60 25 m. of narrow gauge of the Sanpete Valley road; 17·4 m. of broad gauge of the Great Salt Lake and Hot Springs road; and 15 m. of broad gauge of the Salt Lake and Los Angeles road—total, 1,376.09 m. There were also 84 m. of electric and 6 m. of steam street railways. Reports of the corporations controlling the steam railroad systems for their fiscal year 1894 showed: Capital stock $17,670,000; funded debt $17,143,000; total investment $35,182,765; cost of roads and equipments $31,590,272; gross earnings $2,278,968; net earnings $713,074; and interest paid on bonds $614,888.

Finances.—In 1895 the bonded debt was $700,000, represented by building bonds $300,000 and territorial bonds $400,000, and there was a floating debt of $100,000. The revenue, comprising a territorial tax of 2 mills and a school tax of 3 mills, was $489,427.05. During the preceding year $899,738 was expended on public buildings and $564,957 on public works. The assessed valuations 1895 were: Real estate $48,778,893; improvements thereon $20,164,688; personal property $17,266,377; and railroad and other corporation property $11,787,193.87—total, $97,942,151.87. The state owns public institutions and other property valued at $1,679,568.

Banking.—Official reports for 1895, Oct. 31, showed that there were 11 national banks in operation and 6 in process of liquidation. The active banks had a combined capital of $2,100,000; U. S. bonds on deposit $812,500; circulation, issued $2,727,190, redeemed $1,922,825, outstanding $804,365; loans and discounts $2,894,523; deposits $2,961,674; reserve required $444,251; reserve held $1,281,285; and ratio of reserve 43·26 per cent. During the year ending 1895, Sep. 30, the exchanges at the United States clearing-house at Salt Lake City aggregated $63,012,914, an increase of $9,889,836 over those of the preceding year. The state banks (July 29) numbered 6, with combined capital $565,000; deposits $290,767; loans and discounts $582,447; resources $966,518; and surplus $61,781. There were also 9 stock savings banks, which had capital $700,000; check deposits $312,585, and savings deposits $1,142,215; resources $2,385,771; and surplus $176,103; and 4 private banks, with capital $189,000; deposits $1,629,538; resources $1,940,754; and surplus $113,516.

Education.—In 1895 the number of children of school age was estimated at 78,850, of whom 57,908 were enrolled in the public schools established under the territorial free-school law of 1890, and 39,821 were in average daily attendance. There were 1,115 teachers (male 470, female 645); school was kept an average of 152 days; and the expenditures were $963,151. The principal institution for higher education is the State Univ. (see UTAH, UNIVERSITY OF). Among the denominational and private secondary schools are Brigham Young College, Logan. 1877 (Latter-day Saints); New Jersey Academy, Logan (Presb.); Central Seminary, Mill Creek (L. D. S.); Wasatch Academy, Mount Pleasant, 1875 (Presb.); Ogden Military Academy, Ogden (non-sect.); Proctor Academy, Provo City, 1887 (Congl.); Brigham Young Academy, Provo City, 1876

(L D. S.); All Hallows College, Salt Lake City (Rom. Cath.); Latter-day Saints College, Salt Lake City; Rowland Hall, Salt Lake City, 1881 (Prot. Episc.); Salt Lake Academy, Salt Lake City (Congl.); Salt Lake Collegiate Institute, Salt Lake City, 1875 (Presb.); St. Mary's Academy, Salt Lake City, 1875 (Rom. Cath.); Sacred Heart Academy, Ogden (Rom. Cath.); St. Mark's School, Salt Lake City, 1867 (Prot. Episc.); St. John's School, Logan (Prot. Episc.); St. Paul's School, Plain City (Prot. Episc.); and St. Jude's School, Layton (Prot. Episc.). The State Agricultural and Mechanical College, at Logan, had (1895) experimental station staff 10, faculty 21, students 320, area under cultivation 103 acres, value $26,800, and special buildings and equipments valued at $158,000. There is also a large number of denominational primary schools. In the Utah School for the Deaf, at Salt Lake City, instruction is given in carpentry and joinery, shoemaking, printing, and sewing.

Religion.—According to the revised census report on statistics of churches issued 1895, U. had in the census year 427 religious organizations, 280 church edifices (and 157 halls used for religious purposes), 128,115 communicants, and church property valued at $1,493,791. The following table gives in detail the denominational statistics, omitting halls in column of 'edifices':

Denominations.	Organizations.	Edifices.	Members.	Value of church property.
Advent	2	....	37	....
Reg. Bapt., N	4	3	327	$65,000
Rom. Cath	28	12	5,938	68,000
Christ. Scientists	1	....	100	....
Congregational	14	2	460	76,000
Disciples of Christ	2	....	270	....
Jewish	1	1	100	40,000
Latter-day Saints	307	192	118,201	736,916
Luth. Ind. Synods	4	...	84	....
Methodist Episcopal	31	29	1,048	223,650
African Methodist	1	....	7	....
Presbyterians, North	20	31	688	212,975
Protestant Episcopal	10	10	751	71,250
Salvation Army	1	....	4	....
Spiritualist	1	....	80	....

The Rom. Cath. Church has the diocese of Salt Lake City, and the Prot. Episc. Church has created the missionary district of Nevada and U., with a bishop for the latter resident at Salt Lake City.

At the seventh international Sunday-school convention held in St. Louis, 1893, Aug. 20—Sep. 2, there were reported in U. 119 evangelical Sunday schools, 519 officers and teachers, and 6,802 scholars—total members 7,321.

Libraries.—According to the govt. report on public libraries in the United States of 1,000 vols. and upward each 1891, U. had 9 libraries, containing 37,993 bound vols., and 5,473 pamphlets. The libraries comprised 6 general, 2 school, and 1 society.

Illiteracy.—In 1880 there were 97,194 persons 10 years old and upward enumerated, of whom 4,851 were unable to read, and 8,826 unable to write. The percentage of total illiterates was 9·1; of native white illiterates 5·9; and of foreign white illiterates 11·8. In 1890 the number 10 years old and upward enumerated was 147,227, of whom 8,232 were classified as illiterates, or 5·6 per cent. Of 145,487 whites, 7,407, or 5·1 per cent., were illiterates; of native whites, 2,219, or 2·3 per cent.; and of foreign whites, 5,188, or 10·3 per cent., were so classified. The colored population of the same age limit numbered 1,790, of whom 825, or 46·1 per cent., were illiterate.

History.—U. was settled by the Mormons under Brigham Young (q.v.) 1847; was ceded by Mexico to the United States 1848; was organized as a terr. 1850, and was admitted into the Union 1896, Jan. 4. The Mormons named the place Deseret, signifying 'the land of the honey-bee,' and Young was the provisional as well the first terr. gov. They also constructed more than 100 m. of the Union Pacific railroad, and nearly all of the Utah Central, Utah Northern, and Utah Western roads. The history of U. from 1847 to 1890 is comprised in that of the Mormons (q.v.).

Government.—The constitution, ratified by popular vote 1895, Nov. 5, provides that the right of conscience shall never be infringed; that no public money or property shall be appropriated for the support of any ecclesiastical establishment; that the right of trial by jury shall remain inviolate; that no law shall be passed granting irrevocably any franchise, privilege, or immunity; and that all laws of a general nature shall have uniform operation. Perfect toleration of religious sentiment is guaranteed, and polygamous or plural marriages are forever prohibited. Art. IV. declares that both male and female citizens of the state shall enjoy equally all civil, political, and religious rights and privileges, and that every citizen of the United States of the age of 21 years and upward, who shall have been a citizen for 90 days, and shall have resided in the state or territory one year, in the co. 4 months, and in the precinct 60 days prior to an election, shall be entitled to vote thereat, excepting idiots, insane persons, and unpardoned persons convicted of treason or crime against the elective franchise. The legislative power is vested in a senate and house of representatives with biennial sessions, senators to be elected for 4 years, and representatives for 2 years, and all to be at least 25 years old. Till otherwise provided the senate will consist of 18 members and the house of representatives of 45; but the senators shall never exceed 30 in number, and the representatives shall never be less than twice nor greater than three times the number of senators. The executive department consists of a gov. (salary till otherwise provided $2,000 per annum); sec. of state ($2,000); state auditor ($1,500); state treas. ($1,000); atty.gen. ($1,500); and supt. of public instruction ($1,500), all elected for terms of 4 years. Candidates for the offices of gov. and sec. of state must be at least 30 years of age, and for that of atty.gen., at least 25 years. The gov. is vested with authority to veto objectionable features of a bill while approving other portions, and in case of his death, impeachment, removal from office, or inability to perform the duties of his office, they devolve upon the sec. of state till the disability ceases or the vacancy is filled by regular election. The gov., justices of the supreme court, and atty.gen. constitute a board of pardons; the gov., state treas., and state auditor, a board of insane asylum commissioners; and the gov., atty.gen., and supt. of public instruction, a board of reform school commissioners. The judicial power is vested in the senate sitting as a court of impeachment, in a supreme court of 3 judges (till 1905 when the number may be increased to 5), in district courts (7 till otherwise provided), in justices of the peace, and such other inferior courts as may be established by law. Judges of the supreme court are elected by the electors of the state at large for terms of 6 years, and the one having the shortest term to serve becomes the chief justice; and judges of the district courts are elected by the electors of their respective districts for terms of 4 years. The constitution locates the public institutions of the state, and confirms to each the lands granted to it by the United States in the act of congress 1894, July 16, as follows: the seat of govt. and the state fair at Salt Lake City; state prison in the co. of Salt Lake; institutions for the deaf and dumb and the blind and the State Reform School at Ogden; and the state insane asylum at Provo City.

The new state started on its course with a full republican administration, and a party majority of 4 in the senate, 17 in the house, and 21 on joint ballot.

The successive govs., with their terms of service, are as follows:

Territorial.

Brigham Young	1850-54	George L. Woods	1870-73
Edwin J. Steptoe	1854-57	Samuel B. Axtel	1873-75
Alfred Cummings	1857-61	George W. Emery	1875-80
Stephen S. Harding	1861-64	Eli H. Murray	1880-86
James D. Doty	1864-65	Caleb W. West	1886-90
Charles Durkee	1865-69	Arthur L. Thomas	1890-93
J. Wilson Shaffer	1870-71	Caleb W. West	1893-96

State.

Heber M. Wells	1896—

Counties, Cities, and Towns.—In 1880 and 1890 the most populous counties and cities were:

Counties.	1880.	1890.	Counties.	1880.	1890.
Salt Lake	31,977	58,457	Boxelder	6,761	7,642
Utah	17,973	23,416	Davis	5,279	6,469
Cache	12,562	15,509	Summit	......	7,733
Weber	12,344	23,005	Sevier	......	6,199
Sanpete	11,557	13,146	Juab	......	5,582

Cities.	1880.	1890.	Cities.	1880.	1890.
Salt Lake City	20,768	44,843	Mt. Pleasant	2,004	2,254
Ogden	6,069	14,889	Brigham	1,877	2,139
Provo	3,432	5.156	Nephi	1,797	2,034
Logan	3,396	4.565	Park City	......	2,850
Springville	2,312	2,849	Payson	.....	2,135
Spanish Fork	2,304	2,214			

The territorial census 1895, showed the population by cos. to be as follows: Beaver 3,791; Boxelder 8,331: Cache 18,286; Carbon 3,696; Davis 7,480; Emery 4,390; Garfield 2,888; Grand 891; Iron 3,123; Juab 6,466; Kane 1,908; Millard 5,375; Morgan 2,261; Piute 1,727; Rich 1,781; Salt Lake 68,182; San Juan 500; Sanpete 15,538; Sevier 7,893; Summit 9,631; Tooele 4,428; Uinta 3,967; Utah 29,229; Wasatch 4,408; Washington 4,619; Wayne 1,520; and Weber 25,015—total, 247,324.

Population.—(1860) 40,273; (1870) 86,786; (1880) 143,963; (1890) 207,905; (1895) local census, 247,324.

UTAH LAKE: body of fresh water in Utah co., Utah, 4,300 ft. above sea-level; area about 130 sq. m. Its waters are discharged at its n. end through the river Jordan (45 m. long) into Great Salt Lake. U. Lake abounds in fish. Its tributaries are Corn creek, Hobble creek, American fork, Spanish fork, and Provo river. It has on the e. the Wahsatch Mts., and on the w. the Oguirrh range, the Lake Mts., and the Tintic Mts.

UTAH, UNIVERSITY OF: co-educational institution at Salt Lake City; organized 1850 under the name of the University of Deseret; name changed as at present 1890. The univ. occupies a square of 10 acres given it by the city 1850 on condition that the main buildings should be erected thereon. In 1895 the city removed this condition, so that the ground may be held if the main buildings are in or contiguous to the city. The year previous the United States govt. granted the univ. a large tract on the Fort Douglas reservation, on condition that it occupy it within five years, and the Literary and Scientific Association of Salt Lake City endowed a professorship with a gift of $60,000. The work of the univ. has been much retarded by lack of funds. In 1895 there were 39 professors and instructors, 503 students, 15,000 vols. in the library, grounds and buildings valued at $250,000, productive funds $135,000, and income $31,000. Pres., James E. Talmage, D.SC.D. In time the institution will realize a handsome sum from its land grants.

U'TAHS (Indians): see Utes.

UTAS: see Utis.

UTENSIL, n. *ū-tĕn'sĭl* [L. *utensĭlĭs*, that may be used, fit for use—from *utor*, I use]: that which is used; an instr. or vessel in domestic use, and the like.

UTERINE, a. *ū'tĕr-ĭn* [F. *utérin*—from L. *utĕrīnus*, uterine—from *utĕrus*, the womb: It. *utero:* akin to Skr. *udara*, the belly]: of or pertaining to the uterus, or proceeding from it; born of the same mother but by a different father. U'terus, n. *-ŭs*, the muscular and vascular part in the females of mammals, in which conception occurs, and in which the fetus is developed and nourished until birth; the Womb (q.v.). Uteritis, n. *ū'tĕr-ī'tĭs*, inflammation of the womb. Utero-gestation, *ū'tĕr-ō-*, the period of pregnancy.

UTES, *ūts*, or Utahs, *ū'tâs:* subdivision of the Shoshone family of American aboriginals. They lead a nomad life—hunting and fishing, and having no agriculture; besides the result of the chase and fishing, their subsistence is on berries, roots and other spontaneous products of the earth. They lead a roaming life or live on reservations in Colo. (985), N. Mex. (number not determinable), and Nev. (do.). Some of their kinsmen, the *Pah-Utes*, are on reservations in Nev. (966); the *Pi-Utes*, also of Shoshone stock, are in Nev. on reservations (203), in Oregon 80. Aboriginals of these tribes not on reservations are not separately enumerated in the 11th U. S. census reports as far as published (1892, Mar.).

UTGARD, n. *ōt'gârd* [Icel., out-yard]: in *Scand. myth.*, a region at the uttermost borders of the habitable world, the abode of giants and monsters; hell.

UTICA, *ū'tĭ-ka:* city, cap. of Oneida co., N. Y.; on the Mohawk river, at junction of the Chenango and Erie canals; and on the Delaware Lackawanna and Western, the New York Central and Hudson River, the New York Ontario and Western, the Rome Watertown and Ogdensburg, and the West Shore railroads; 52 m. e. of Syracuse, 95 m. w.n.w. of Albany; 6 sq. m. It is in the third richest dairy co. in the United States, and for many years has been the principal cheese-market of the country. The city occupies an attractive site that rises gradually from the river, and is supplied with gas and electric light plants, adequate water-works, paid fire dept., street railroads extending to suburban villages, three public parks, and a popular driving-park on the e. boundary. In 1890 the various manufactures had $14,332,510 capital, 12,598 hands, and $15,615,715 in value of products. The chief industries according to value of products were: men's clothing, $2,833,308; cotton goods, $2,160,247; boots and shoes, $851,300; foundry and machine-shop products, $771,616; hosiery and knit goods, $715,178; and printing and publishing, $513,940. The manufactures now include woolen, cotton, and knit goods; stoves; steam-engines; agricultural implements; farm-wagons; locomotive-lamps; millstones; furniture; organs; stoneware; drain-pipe;

fire-brick; carpet, and oil-cloth. In 1891, Jan., the net public debt was $31,400; real property valuation $16,461,052; personal $2,330,606; tax-rate $1.69 on $100. There were 3 daily, 1 tri-weekly, 1 semi-weekly, 9 weekly, 7 monthly, and 1 quarterly publications. In 1891, Sep., there were 4 national banks (cap. $1,700,000), 2 state banks (cap. $325,000), and 1 savings bank (surplus $1,091,265). The public and notable buildings included the city-hall, public library, opera-house, 3 hospitals, 4 orphan asylums, 2 homes for the aged, home for women, Utica Female Acad., a public dispensary, and the State Lunatic Asylum. There were 44 churches—viz., Rom. Cath. 7; Prot. Episc. 6; Presb. 6; Meth. Episc. 5; Bapt. 4; Welsh 4; Ger. Evang. Luth. 3; Eng. Evang. Luth. 2; Ger. Moravian 2; Hebrew 2; and Congl., Ref., and Univ. each 1; and 20 public and 13 private and denominational schools.—The site of the city was included in a grant made by George II. 1734. Fort Schuyler was erected on the s. bank of the Mohawk river at the fording-place 1758; several log-cabins were built in the vicinity 1788, and a store and road-house 1790; the place was incorporated as a village 1798; and a city charter was granted 1832.—Pop. (1880) 33.914; (1890) 44,007.

UTICA, *ū'tĭ-ka:* ancient city of n. Africa; seat of a Phœnician colony, founded B.C. 1101; about 20 m. n.w. of Carthage, not far from the present city of Tunis. Extensive remains are still found on a hill 8 or 10 m. inland, but anc. U. stood on the coast. During the third Punic war, U. submitted to Rome, and became the seat of a Roman governor. It was afterward the see of a Christian bishop. Here Cato the Younger (q.v.) died.

UTILITA'RIANISM: theory of Ethics, or of the science of moral obligation, that makes the happiness of mankind the criterion of right. The word 'Utility' was used in this sense by Jeremy Bentham; the form 'Utilitarianism' by John Stuart Mill.

The doctrine of U. is opposed to all those theories that refer us to some internal sense, feeling, or sentiment, for the test of right and wrong; a test usually described by such phrases as a Moral Sense, and Innate Moral Distinctions (see ETHICS); therefore Utility is sometimes termed the *external* or objective standard of morality. It is opposed also to the view that founds moral distinctions on the mere arbitrary will of God.

The Utilitarian theory has been maintained in ancient and in modern times, though with considerable variation, not merely in the mode of stating it, but in important peculiarities. Thus, in ancient times it was held by Epicurus, but in a purely self-regarding form; each person's end was his own happiness exclusively, the happiness of others being instrumental and subordinate. The modern phase of the theory may be said to begin with Hume. He employed, as the leading term of his system, not Utility, but Benevolence; whereby he gave especial prominence to the disinterested side of moral actions. He strenuously maintained, what must be regarded as the essential feature of the Utilitarian doctrine, that no conduct is to be deemed worthy of moral approbation unless, in some way or other, it promotes human happiness; and that actions ought to be visited with disapprobation exactly according as they have the opposite tendency.

Jeremy Bentham is, more than any other person, identified with the theory of 'Utility,' which was in his hands not merely the foundation of Ethics, but also the basis and justification of political and legal reforms. Having in view the state necessity of sacrificing smaller interests to greater, or, at all events of not sacrificing greater interests to smaller, he described the ethical end as 'the greatest happiness of the greatest number.' He illustrated the doctrine by setting it in opposition to *asceticism*, which he interpreted to mean that pleasure is forfeited, and pain incurred, without yielding a compensating amount of good, either to the agent or to other persons.

Paley advocated a form of U.: he made the will of the Deity, enforced by future rewards and punishments, the impelling motive to duty; but in determining what that will was, in particular cases, he included a reference to the beneficial tendency of actions.

James Mill maintained substantially the views of Bentham. Sir James Mackintosh, while differing in some points from Bentham and from Mill, in the main adhered to Utility as the ultimate standard of right. John Austin, in his *Province of Jurisprudence Determined*, contributed a lucid exposition and a powerful defense of the principle. John Stuart Mill devoted a separate work to the subject. Samuel Bailey, in *Letters on the Human Mind*, III., discussed the ethical problem fully, and pronounced on the

Utilitarian side. Herbert Spencer ranks among the upholders of U.; likewise Bain, in his edition of Paley (Chambers's series) and in *The Emotions and the Will*.

Before stating the arguments for and against the principle of Utility as the basis of morals, it is proper to inquire what sort of proof an ethical system is susceptible of. Ethics is a practical science (see SCIENCES), and, as such, involves an end; having the peculiarity of being the final or comprehensive end of all human conduct: see TELEOLOGY. Now, in the speculative or theoretical sciences, *ultimate* principles cannot be proved; it is the nature of proof to rest one doctrine on some other doctrine, so that we must come at last to what is taken without proof: we cannot prove our present sensations, nor can we demonstrate that what has been will be; we must take these things for granted. And so it is with ultimate ends in the practical sciences: we cannot prove that each person should seek his own happiness; we must assume it as an ultimate fact, and trace the consequences. The final end sought in all conduct cannot be reasoned; it must be gathered from the actual conduct of men; we must find by observation what ends men actually pursue, and, if we can, generalize them into one comprehensive statement. The function of argument in the case is to show where inconsistency has crept in, or to make professions accord with practice. Thus it is that the supporters of U. aver that men, even though refusing the theory, still proceed on it in their conduct; and that the doctrine cannot be impugned consistently with the admitted motives of human action. Human beings, as a rule, have no other end in life but happiness, either for themselves or for others; and morality belies human nature if it does not accord with this universal object of pursuit.

Although Utilitarians hold that good and evil, right and wrong, are properly determined by a calculation of the consequences as regards human happiness, they do not all maintain that past or existing systems of morals have been on all points framed on this principle. Bentham and James Mill appear to have thought that the rule has always been kept in view, though often badly applied. But others, equally earnest in regarding it as the only legitimate rule, are of opinion that, in the past and existing ethical precepts, men have been guided partly by Utility, partly by Sentiment—i.e., liking or disliking for the act itself, irrespective of any further consequences. Thus, the veneration of the Hindu for the cow, on which ethical duties are founded, is an instance of sentimental liking; the Jewish and Mohammedan prohibition of the pig is a matter of sentimental dislike. In the ceremonial rites of ablution, so widely prevalent, there is a certain show of Utility, mingled with the fancy of cleanliness or purity. In the doctrine of the sacredness of kings there is a combination of Utility and Sentiment.

The following are the chief objections to U., with the arguments in reply:

I. It is maintained that Happiness is not, either in fact or in right, the sole aim of human pursuit; that men actually, deliberately, and by conscientious preference, seek other ends. Thus, virtue is an end in itself, to be sought whether it yield happiness or not, and even though it were productive of the greatest misery. The qualification, however, is always added, that virtue, in the long run, without intending it, and all the more for not intending it, is the unfailing source of happiness.

To which the supporter of U. answers:

1. It is quite true that men seek other ends than immediate happiness to themselves and to others, and that, in particular, they cultivate the virtues as ends in themselves, without always thinking of them as means to happiness. But this is by the operation of a familiar law of the mind, whereby what was originally of the nature of means comes at length to be valued as an end; such is the well-known case of the love of money. The virtues of justice and veracity are essential to human society, just as money represents the basis of subsistence; and, by frequent association, the regard that we pay to the end is transferred at last to the means.

2. It may be shown in many ways that the great social virtues derive their worth in our estimation from their subservience to human happiness, and not by any absolute title of their own. Take, first, Veracity or Truth, which, of all the moral duties, has most the appearance of being an absolute and independent requirement. A little consideration will show that even this is not in our eyes an unlimited or unqualified virtue. Men have always approved of deception practiced toward an enemy in war, to a madman, or a highway robber; also, secrecy or concealment, even though misinterpreted by others, is generally allowed—unless it leads to some pernicious results; while if the divulgence of the truth were attended with harm, it would be generally reprobated. But an absolute standard of truth is incompatible even with secrecy or disguise; in departing from the course of perfect openness, or absolute publicity of thought and action, in every possible circumstance, we renounce ideal truth in favor of a compromised, qualified veracity—a following of truth only so far as is expedient.

Again, as regards Justice, the presence of considerations of Utility is equally obvious. There is no absolute rule of justice that does not bend to circumstances. If justice be defined giving every one his own, or what he is entitled to, there is the show of an absolute rule; but, in reality, nothing is determined. The meaning is, to give to each what *law* and *custom* have declared to be a man's own. It is declared just for an elder son to receive a larger share of the parental estate than all the rest of the children put together; but it is clear that whatever justice there is in this must be founded on some ground of expediency. (See, on this subject, J. S. Mill's *Utilitarianism*, chap. v.)

II. It is further objected to the adoption of Utility as the standard of Right that the full consequences of actions are too numerous, involved, and complicated to be reduced to calculation; and that, even where the calculation is possible, people have seldom time to make it.

To this it is answered, first, that the primary moral duties refer to conduct that can be fully calculated to the satisfaction of any reasoning mind. Thus, to revert to the two leading examples, Truth and Justice: the habitual disregard of these duties would soon bring a society to utter confusion and ruin; without them there could be no social co-operation; man would fall below the condition of the gregarious animals; the race could hardly be saved from extirpation. On the other hand, the observance of these duties in a high degree raises to a corresponding degree the means of human happiness. The balance of advantages is all on one side—there is no case for the other side at all.

There have always been moral rules or enactments where the calculation of consequences was much less easy—e.g., the indissolubility of marriage is maintained in some countries, and not in others; and there have been considerable differences as to the forbidden degrees of affinity in marriage. In these usages there are both advantages and disadvantages, and the preponderance is variously estimated by different calculators. In such cases the Utilitarian would say: Do not make a compulsory enactment restricting liberty, which restriction is an evil in itself, unless the balance of advantages is unquestionable and great.

As to the argument that it is impossible to make the calculation of consequences at every time of our performing a moral act, the reply is, this is unnecessary; the calculations as to the various duties have been already made, and are embodied in rules, which rules we remember and apply without thinking of the process through which they are reached. The navigator at sea does not need to compute the *Nautical Almanac* every time he determines his longitude; he carries it to sea with him ready for use.

III. A third objection to U. is, that men in all ages have distinguished between the Right, on one hand, and the Expedient, i.e., the Useful, on the other: the two are in most languages put in opposition or contrast. The reply is, that the Expedient, when thus opposed to the Right, commonly means what seems expedient for the agent at the time, but is not expedient for people generally, or even for himself in the long run. It is sometimes expedient, in this sense, to tell a lie, to rob, or to murder; but such actions are not expedient in the sense of general utility or the greatest happiness of mankind, nor in the sense of the greatest happiness of the individual.

It is further to be remarked, in this contrast of the Expedient and the Right, that the Expedient may mean simply an addition to our conveniences or comforts, something that it is well for us to have, but that we might do without. Thus, it is highly expedient to possess cheap postage, railways, and electric telegraphs. On the other hand, the Right points to the essentials of our existence; without the fulfilment of contracts, respect to life and property, obedience to law, society would be dissolved.

The distinction was expressed in one of Cromwell's speeches, by the contrast of a nation's Being and its Well-being; what secures the one is emphatically the Right, the promotion of the other is the Expedient. Right is the highest and most imperative form of Expediency.

IV. A fourth objection against U. is, that all useful things are not made obligatory; it may be useful to have railways, but it is not a duty of every man to make them. But the Utilitarian, while contending that nothing should be made a moral duty but what contributes to the happiness of mankind, does not hold the converse, that whatever promotes human welfare is a moral duty. Perhaps this response presents the point most open to question on the Utilitarian side.

So much for the objections. The positive ground of U. is, that men actually recognize happiness as their paramount consideration or highest end. This, as a general rule, is too obvious to require proof. Each one's plan of life is principally made up of ideas of happiness to self or to others. All our good wishes to one another are repetitions of the one idea, 'May you be happy.' The seeming exceptions have been noticed above. The objector, however, might answer that the mere fact that a certain line of action is common among men is not a proof that that line supplies the chief or even the true ethical standard.

One of the confirmations of U. which is often appealed to is derived from the usual inducements to right conduct common to all moralists. We find that no one can preach morality without making use of its bearings on happiness. The very meaning of the terms expressive of the highest virtues—love, goodness, mercy, compassion, fidelity, honesty, integrity, justice—is something that relieves the pains and augments the pleasures of sentient beings. To love is to make the object happier, and love is the fulfilling of the law. This argument states an undeniable truth; but in the form thus given it seems to show that happiness depends on doing right—not the form of statement special to U., which is that doing right depends on happiness.

Although there be duties occasionally imposed on men that have no obvious tendency to increase happiness, but rather to diminish it, as the labors of some cumbrous ceremonial system like Hinduism, those duties have to be upheld by the fear of punishment or the hope of reward, still testifying to the predominating motives of the human mind. It is not, however, by reference to traditional observances that the happiness motive is most clearly tested. The proper plan, as remarked by Samuel Bailey, is to try it upon some fresh case, some entirely new enactment, when it will be found that the interest or happiness of the community is the *sole* consideration appealed to. If a new law of inheritance is proposed, or a new government board constituted, nobody advances any other criterion but expediency, or the good of certain persons now or in the future; unless such expediency can be shown, no one will move in the matter at all; and the earnestness of the promoters will be in exact proportion to their sense of the resulting good. If U. be claimed as the standard for legal enactments, this proof may suffice.

Probably in this debate, as in many others in philosophy, each side has one side of the great truth, to whose adequate statement both sides must contribute. Doing right and happiness are essentially and ultimately inseparable: it is vain to try to consider them as in any large sense disconnected from each other.

It is to be noted, however, that U. is considered in this article not as a theory of the *ultimate ground* or reason of man's moral obligation to right or duty, but as a theory of the practical test or criterion by whose application right or duty is to be judged and decided. These two spheres of the theory, though connected, are distinct; and the former deals with the profoundest questions.

UTILITY, n. *ū-tĭl'ĭ-tĭ* [F. *utilité*—from L. *utilitas* or *utilitātem*, utility, benefit—from *utilis*, useful—from *utor*, I use: F. and It. *utile*, useful]: usefulness; profitableness; benefit; advantage; profit. **UTILIZE**, v. *ū'tĭl-īz*, to render profitable; to turn to good account or use. **U'TILIZING**, imp. *-ī-zing*. **U'TILIZED**, pp. *-īzd*. **U'TILIZA'TION**, n. *-ĭ-zā'shŭn*, the act of turning to account or of making profitable. **U'TILITA'RIAN**, a. *-ĭ-tā'rĭ-ăn*, pertaining to utility or things useful; considering utility rather than beauty; regarding usefulness only; pertaining to utilitarianism: N. one who holds the doctrine of utilitarianism. **U'TILITA'RIANISM**, n. *-ĭzm*, the doctrine which makes utility the sole standard of good for man, or of moral conduct; the doctrine that 'the greatest happiness of the greatest number' should be the end and aim of society in its social and political institutions.—SYN. of 'utility': service; use; avail; usefulness; advantageousness; convenience.

UTIS, n. *ū'tĭs*, or **UTAS**, n. *ū'tăs* [F. *huit*, eight—from L. *octo*, eight]: in *OE.*, the octave; the eighth day, or the space of eight days, after a saint's day; a saint's day or festival.

UTLATE'CAS: see QUICHES.

UTMOST, a. *ŭt'mōst* [AS. *utemest*—from *ut*, out; *mæst*, most]: at the furthest point or extremity; most distant; last; extreme; of the greatest or highest degree: N. the most that can be; the greatest power, degree, or effort.

UTOPIA, *ū-tō'pĭ-a* [Gr. *ou*, not; *topos*, place—therefore literally 'nowhere']: the imaginary island which Sir Thomas More (q.v.) makes the scene of his famous political romance, *De Optimo Reipublicæ Statu, deque Nova Insula Utopia*, pub. in Lat., Louvain 1516, transl. into Eng. by Bp. Burnet. This island, which More represents as discovered by a companion of Amerigo Vespucci, is the abode of a happy society, which, in virtue of its wise organization and legislation, is free from the harassing cares, inordinate desires, and customary miseries of mankind. More's romance obtained wide popularity, and the epithet *Utopian* has since been applied to visionary or impracticable schemes for improvement of society.

UTOPIAN, a. *ū-tō'pĭ-ăn* [from More's *Utopia* (lit., *no place*), an imaginary land which he represents as enjoying the utmost perfection in its laws and institutions, etc.—coined from Gr. *ou*, not; *topos*, a place]: pertaining to any state of ideal perfection; fanciful; chimerical; impracticable: N. one who is enthusiastic in the advocacy of impracticable schemes. UTO'PIANISM, n. *-ĭzm*, the tendencies of a utopian; chimerical schemes in theory or practice.

UTRAQUIST, n. *ū'tra-kwĭst* [from L. *utraquista*—from *utrăque* (sc., *specie* in both kinds)]: one who believes that communicants should partake of both the cup and the bread: applied first in the 14th c. to all those members of the Western Church, principally followers of John Huss (q.v.), who contended for administration of the Eucharist to the laity in both kinds; but in later times restricted to one particular section of the Hussites, the Calixtines (q.v.), though all Hussites claimed this as a fundamental principle of their church discipline. The name may be said to date from 1415, when the followers of John Huss in Prague and elsewhere in Bohemia adopted 'the communion of the cup' as their rallying cry, and emblazoned the cup on their standards as the distinguishing badge of the association. In 1417 the Univ. of Prague, by a formal decision, directed that the laity should communicate in both kinds; the result being that the Council of Constance prohibited students from resorting to Prague for study. The Hussite party, on the contrary, made the demand one of the four points on which they insisted as the condition of their submission to the church. It was rejected by the Council of Constance; but the Council of Basel, 1433, acceded to it on the condition that, whenever communion was administered with the cup to the laity, the ministering priest should accompany the ministration with a declaration that Christ was contained whole and entire under each species. A portion of the Hussite party was content with the explanation of this and the other points offered by the council, but the more strenuous held out: see HUSS, JOHN. Those who yielded were called Utraquists. During the Reformation troubles this division was still maintained. The Utraquists were favorably regarded by the imperial party; and after the battle of Mühlberg, 1547, they alone were formally tolerated in Bohemia and Moravia. One of the most celebrated leaders was Jacobus v. Mies. *Note.*—The name U. is applied also to certain districts or villages in Bohemia and Moravia, in which *both languages*, i.e., Bohemian and German, are spoken.

UTRECHT, *ū'trĕkt*, Dut. *ū'trĕcht:* prov. of the Netherlands; bounded w. by S. Holland, n. by N. Holland and the Zuider Zee, e. by Gelderland, s. by the Rhine and Leck; 42 m. long from e. to w., and 21 wide from n. to s.; 346,405 acres, of which 62,500 are arable, 180,000 under grass, 39,000 in wood.

The country is varied by beautiful hilly districts, level fields, orchards, tilled land, meadows, and moss. The hilly tract is well wooded, and stretches from near Amersfórt to

Rhenen on the Rhine, 21 m. Rye, oats, and buckwheat are grown; sheep, cattle, and bees extensively kept. S. of this belt is rich clay land, producing excellent wheat and barley. Near Amersfórt and Rhenen, tobacco is largely planted.

U. is watered by the Rhine, Vecht, Leck, Amstel, Grebbe, and many other rivers. Many herrings, eels, flounders, anchovies, etc., are taken in the Zuider Zee. Besides agriculture, the industries are soap-boiling, sawing wood, copper and iron founding, making machinery, carpets, tiles, bricks, coarse pottery, cement, etc. There are many beautiful country-seats, the climate being dry and healthful.

The chief places are Utrecht (q.v.), Amersfórt (q.v.), Rhenen, Wijk bij Duurstede, Montfórt, and Ijsselstein (pronounced *ī'sĕl-stīn*). There are 66 country parishes.—Pop. (1886) 212,454, of which 62 per cent. Prot., 37 per cent. Rom. Cath., and 1 per cent. Jews; (1891) 226,847.

U'TRECHT (*Ultrajectum* or *Trajectum ad Rhenum*): town of Holland, cap. of the prov. of U.; 24 m. s.e. of Amsterdam, beautifully situated in a district abounding in sand-hills, woody heaths, rich grassy meadows, extensive orchards, flower-gardens, and cultivated fields. The old walls were levelled 1830, planted with trees, and formed into beautiful and well-kept promenades; but U. is now surrounded with strong forts, and is strategically important as covering Amsterdam.

U. is favorably situated for trade, being the point from which several railways radiate: it is traversed by two canals, and has excellent water-communication by the Old Rhine and the Vecht. The staples are grain, cattle, and various manufactures. It is the residence of many noble families, the seat of a univ., national veterinary school, national hospital, high military court, etc. Principal buildings are the cathedral or Domkerk, the town-house, the mint, the univ., and several handsome barracks for the infantry and cavalry, especially the Willemskazerne. The cathedral was consecrated to St. Martin about 720. In 1674 a hurricane destroyed the body of the building between the choir and the tower, so that the latter (321 ft. high) is now isolated. The Univ. of U., founded 1636, has 41 professors and about 600 students. It has a fine library of 150,000 vols., museum of nat. history, botanic garden, and observatory. There is a national school for milit. surgeons; a grammar school; normal school; musical college; historical, meteorological, medical, pharmaceutical, and other societies. Since 1723 U. has been the headquarters of the Jansenist Church (q.v.).

The charitable institutions are numerous. Principal industries are: manufacturing tobacco and cigars; woolen fabrics and carpets; ultramarine and bone-black; salt; furniture; baskets; tin, copper, and silver work; sawing wood; rope-making; iron-founding; book-printing; etc. The royal cigar factory alone makes 40,000 cigars daily.

U. is one of the oldest cities of the Netherlands, founded (probably) by the Romans. Here the famed union of the northern provinces for defense of political and religious freedom was formed 1579, Jan. 23. For a short time in 1807, Louis Napoleon, King of Holland, resided in U. It has been the birthplace of many distinguished men, among others Pope Adrian VI. 1459.—U. has acquired celebrity for the number of treaties signed there in bringing to an end the war of the Spanish Succession: see UTRECHT, PEACE OF: SUCCESSION WARS.

Pop. (1876) 66,106; (1887) 79,166; (1891) 87,911.

U'TRECHT: town in the extreme s. of the South African Republic, on the frontier of Natal, the Buffalo river here marking the boundary. It is a place of considerable importance and the cap. of a district.—Pop. about 3,500.

U'TRECHT, PEACE OF: the peace concluded at Utrecht (q.v.) 1713, Apr. 11, bringing to an end the war of the Spanish Succession (see SUCCESSION WARS). Preliminaries between France and Great Britain had been signed in London 1711, Oct. 8. A peace-congress was opened at Utrecht 1712, Jan. 12; but the preposterous demands of Austria forced the French to break off the conferences, in the hope of making a separate peace with Britain and compelling the other allies to lower their pretensions. This plan was successful: agreement on all points at issue was established between France and Great Britain 1712, Aug.; and soon afterward agreements were made with Holland, Portugal, Prussia, and Savoy. As each of the contracting parties negotiated in its own name, nine distinct treaties of peace were signed 1713, Apr. 11. By the treaty between France and Great Britain, France ceded St. Kitt's, Hudson's Bay, Nova Scotia, and Newfoundland (liberty of fishing for cod being reserved), formally recognized the reigning dynasty and the Hanoverian succession, agreed to demolish the fortifications of Dunkirk, engaged that the crowns of France and Spain should never be united, and that no part of the Spanish Netherlands should ever be ceded or transferred to France. Spain renounced her Italian possessions in favor of Austria, and gave up Gibraltar and Minorca to Great Gritain, with which power also she concluded the *Assiento* (q.v.) treaty. The chief of the special agreements with the other contracting parties were as follows: Ypres, Knocke, etc., to be exchanged with Holland for Douai, Bouchain, etc., and a treaty of commerce to be concluded; both banks of the Amazon to belong to Portugal; Spanish Gelders and the dist. of Kessel to be ceded to Prussia, and its ruler's title of king, assumed 1701, formally recognized—Prussia in turn resigning all claims to the principality of Orange; the Duke of Savoy to obtain Sicily, with title of king, etc. The treaty of U. did not make peace with Austria and the German empire; but in the following year, at Rastadt (1714, Mar. 17) and Baden (1714, Sep. 18), they agreed to substantially the same terms as were offered at U. The electors of Cologne and Bavaria, who had been put under the ban of the empire, were restored; Sardinia, granted to Bavaria at U., was restored to Austria; Austria renounced her claims to the Spanish succession; the cession of the Spanish possessions in Italy was confirmed; Breisach and Freiburg, in the Breisgau, were given to Austria; the highest ridge of the Maritime Alps was made the boundary between France and Savoy; and on failure of the Spanish Bourbons, the crown of Spain was to fall to the House of Savoy.—See Lord Mahon's *History of the War of Succession in Spain* (Lond. 1832).

UTRERA, *ô-trâ'râ:* old town of Spain, prov. of Seville, 18 m. by railway s.e. of Seville. In early times, it was flourishing and populous; and in recent years it has begun to revive. It is important as a military post; contains a beautiful Gothic church, a Moorish castle, and cavalry barracks. The streets and promenades are kept clean and fresh by streams of running water. The inhabitants are mostly agriculturists engaged on the productive estates which surround the town. Grain, wine, oil, and fruit are produced. Sheep and cattle are reared in the vicinity. —Pop. 15,093.

UTRICLE, n. *ū'trĭ-kl* [L. *utricŭlus*, a small skin or leathern bottle—from *uter*, a bag or bottle made of an animal's hide]: in *bot.*, a thin-walled cell; a bladder-like covering; a thin-skinned one-seeded fruit. **Utricular**, a. *ū-trĭk'ū-lėr*, containing vessels like small bags. **Utric'ulate**, a. *-lāt*, utricular. **Utric'ulus**, n. *-lŭs*, a kind of fruit with an inflated covering; a little bladder filled with air, attached to certain aquatic plants.

UTRICULA'RIA: see Bladderwort.

UTTER, a. *ŭt'tėr* [AS. *ut*, out; *utor*, outer, extreme]: complete; perfect; total; absolute; thorough; entire; in *OE.*, situated on the outside or remote from the centre; outer: V. to send *out*, as words; to speak; to disclose; to publish; to put into circulation, as base coin; to dispose of. **Ut'tering**, imp. **Ut'tered**, pp. *-tėrd*. **Ut'terable**, a. *-ă-bl*, that may be uttered; that may be spoken or expressed in words. **Ut'terance**, n. *-ăns*, manner of speaking; pronunciation; a putting into circulation, as base coin. **Ut'terer**, n. *-ėr*, one who utters; a promulgator. **Ut'terly**, ad. *-lĭ*, to the full extent; perfectly; totally. **Ut'termost**, a. *-mōst*, extreme; in the furthest or highest degree: N. the greatest power or degree; that beyond which nothing is. **Utter barrister**, one admitted but not yet allowed to plead within the bar. **To the uttermost**, in the highest degree.—Syn. of 'utter, v.': to deliver; give forth; discharge; pronounce; liberate; discover; sell; vend; declare; express;—of 'utter, a.': extreme; excessive; utmost; peremptory; perfect; mere.

UTTERANCE: see under Utter.

UTTERANCE, n. *ŭt'tėr-ăns* [F. *outrance*, excess—from *outre*, beyond—from L. *ultra*, beyond]: in *OE.*, extremity; terms of extreme hostility.

UTTOXETER, *ŭt-tŏks'ė-tėr*, locally, *ŭks'ė-tėr:* market-town of Staffordshire England: on an eminence above the vale of the Dove, 16 m. n.e. of Stafford. A church with an ancient tower and lofty spire is noteworthy. There are two large breweries.—Pop. about 4,000.

UVEA, n. *ū'vē-ă* [L. *uva*, a grape]: in *anat.*, the posterior layer of the iris, so called from the black pigment which covers it, and which resembles the skin of a black grape. U'VEOUS, a. *-ŭs*, resembling a grape; of or pertaining to the uvea. U'VIC, a. *-vĭk*, of or from the grape.

UVULA, n. *ū'vū-lă* [L. *uva*, a grape: It. *uvola*]: in *anat.*, the fleshy conical body suspended from the middle of the lower border of the soft Palate (q.v.). U'VULAR, a. *-lėr*, of or pertaining to the uvula.

UXBRIDGE, *ŭks'brĭj:* market-town in the county of Middlesex, England; on the Colne, 15 m. w. of London. Its corn-market is one of the most important in the kingdom, and it has several breweries, and flour-mills, an iron-foundry, and considerable trade in lumber.—Pop. (1881) 7,712; (1891) 8,206.

UXORIOUS, a. *ŭg-zō'rĭ-ŭs* [L. *uxōrius*, of or pertaining to a wife—from *uxor*, a wife]: foolishly fond of a wife. UXO'RIOUSLY, ad. *-lĭ*. UXO'RIOUSNESS, n. *-nĕs*, excessive and foolish fondness for a wife. UXOR'ICIDE, n. *-ŏr'ĭ-sīd* [L. *cædo*, I kill]: one who murders his wife; the murder of a wife by her husband.

UYÜK: see EUYUK.

UZBEKS, *ŭz'bĕks:* important branch of the Turkish family of Tartars, constituting the chief element in the native population in Khiva, Bokhara, and Khokand (Ferghana). Some are still nomads, but most are settled in towns: see USBEGS.

V

V, v, *vē:* 22d letter (and 17th consonant) of the Eng. alphabet; *u* and *v* were formerly used indiscriminately the one for the other, but now *u* is used only as a vowel, and *v* only as a consonant. The name of the letter is from the Phœnician and Hebrew *vau* (signifying a nail, which the original form of the letter resembled), which stood sixth in the alphabet, and became the Digamma (q.v.) of the Old Greek, and the *f* of the the Latin (see F). The Greek *υ* (see ALPHABET), from which the Lat. *v* is taken, had, in the classical period, degenerated into a sound like the French *u*, and in modern Greek is undistinguishable from *i*. The Greeks, after they had lost the digamma, represented Lat. *v* by *ου* or *β*; e.g., Ουαρρων or Βαρρων = Varro, Βιργιλίος = Virgilius. In the beginning of Latin words, *v* must have had a consonantal sound approaching that of *v* in English, as is inferred from its persistence as compared with the Greek digamma; e.g., Vinum = (Ϝ)οἶνος, Vesta = ‘Εστία. Between two vowels, on the contrary, it was often dropped out, as in *nuper* for *novumper*, *Jupiter* for *Jovipiter*, *prudens* for *providens;* from which we may conclude that it had in that position the power of a semivowel, like Eng. *w*. In New High German, *v* takes the place of Gothic and Eng. *f* (see F), and is pronounced like *f*, while the *v*-sound is expressed by *w*. —As a Roman numeral, V stands for 5, and with a dash over it ($\overline{\mathrm{V}}$) for 5,000.—In *chem.* it is the symbol for *Vanadium*. —As an abbreviation, v. stands for *verb* or *verse;* and in legal papers for *versus*, ‘against.’

VA, v. *vâ* [It.]: in *mus.*, go on—e.g., *va crescendo*, go on increasing the power.

VAAL, *vâl*, RIVER: important branch of the Gariep (q.v.) or Orange river, s. Africa. It receives its name (signifying ‘Yellow’) from the color of its waters when in flood. Ky Gariep, its Hottentot name, has the same meaning. The Bechuanas (see BETJUANS) call it Namagari. The V. rises in the Drakenberg range, at the n.w. angle of Natal, and after a very circuitous course of about 450 m., partly through the S. African Republic (q.v.), but mainly along its s. frontier, joins the other great branch, the Nu Gariep or Orange river, in lat. 29° 10′ s., long. 24° 28′ e.

VACANT, a. *vă'kănt* [F. *vacant*—from L. *vacans* or *vacan'tem*, empty; *vacārĕ*, to be empty: It. *vacante*]: empty; void of every substance except air; not filled by an occupant or possessor; unsupplied; idle; free; indicating want of thought, as a face; inane. **VA'CANTLY,** ad. *-lĭ*. **VA'CANCE,** n. *-kăns*, in *Scot.*, vacation. **VA'CANCY,** n.

-kăn-sĭ, that which is vacant; empty space; time of leisure; situation or office unfilled; the time during which a place or situation remains unfilled; the state of being unfilled; listlessness; emptiness of thought. VACATE, v. *vă-kāt'* [L. *vacātus*, pp. of *vacārĕ*, to be empty, to be without]: to make empty; to withdraw from; to annul. VACA'TING, imp. VACA'TED, pp. VACA'TION, n. *-shŭn* [F.—L.]: act of vacating or making void; the intermission of judicial proceedings; the period during which court does not sit; recess (the 'long vacation' in Eng. courts is Aug. 10—Oct. 24): interruption for a time of regular studies at a college or school; intermission of any stated employment.—SYN. of 'vacancy': vacuity; chasm; relaxation; intermission;—of 'vacant': devoid; free; unencumbered; uncrowded; unfilled; disengaged; thoughtless.

VACCINA'TION: process by which a specific disease, termed *Vaccinia* (q v.) or cow-pox is introduced into the human organism for protection against a far more severe disorder—smallpox. For the history of the remarkable discovery of V.—'that masterpiece of medical induction'—see the life of Jenner (q.v.). In his *Inquiry into the Causes and Effects of the Variolæ Vaccinæ* (1798), he establishes the following facts: (1.) That this disease (cow-pox) casually communicated to man has the power of rendering him unsusceptible of smallpox; (2) that the specific cow-pox alone, and not other eruptions affecting the cow, which might be confounded with it, has this protective power; (3.) that the cow-pox might be communicated at will from the cow to man by the hand of the surgeon, whenever the requisite opportunity existed; (4.) that the cow-pox once ingrafted on the human subject, might be continued from individual to individual by successive transmissions, conferring on each the same immunity from smallpox as was received by the one first infected from the cow.

The *method of vaccinating* and the *phenomena of cow-pox*, as observed in the human subject after V., claim our first and chief attention. Except under circumstances of special risk (e.g., where smallpox is in the neighborhood), children should be vaccinated only when in apparently good health. Diarrhea and skin-diseases are especially to be avoided; and it is important to see that there is no chafing behind the ears, or in the folds of the neck or groin. V. should be in very early infancy, if health permits; healthy children in large towns, when a month or six weeks old; more delicate children, at the age of two or three months; and all except those whose health positively contra-indicates V., by the age of three months.

The lymph to be used should always be taken from a healthy child and from thoroughly characteristic vesicles; and when lymph perfectly satisfactory cannot be procured, V. should be postponed. Lymph is usually taken when the vesicle is fully formed, generally about a week after V.; if not taken till the areola (below described) is complete, its protective power is far less certain. Prime lymph, according to a high authority, has always a certain viscidity; and a thin serous lymph, even from a vesicle which is not advanced, is to be avoided. Babies are much better lymph-givers than older children or adults; and children of dark complexion, not too florid, with thick, smooth, clear skin, yield the most effective lymph. Lymph should always, if practicable, be passed direct from arm to arm; and preserved lymph should be used only when that from a vaccinated child cannot be obtained. A good vesicle freely punctured on its surface exudes enough lymph or vaccine matter for the direct vaccination of five or six children, and for charging six or eight ivory points for future emergencies. The process of V. consists essentially in introducing the lymph into the structure of the true skin, or in bringing it in contact with the absorbing surface. This may be effected in various ways, one of the most common being by puncture. The operation is extremely simple. The skin on the outside of the arm, below the shoulder (sometimes in adults on the leg, above the knee), should be held on the stretch, and a very sharp, clean lancet, well charged with lymph, should be made to puncture the skin from above downward, at an angle of about 45°, and be made just to enter the true skin: the matter thus inserted is retained by the valvular character of the puncture and the elasticity of the skin. In this form of the operation, not less than five or six such punctures should be made, half an inch from one another; or, for greater certainty, three punctures may be made on each arm. If the lymph is preserved on 'points,' each point, after being held in the steam of hot water to dissolve the lymph, should be inserted into the punctures made by an ordinary lancet. Some surgeons make a number of minute superficial punctures over a patch of the size of a silver half-dime, and spread the lymph over this spot with the flat part of the lancet: this kind of tattooing should be repeated on three spots. Others make a number of parallel scratches, or crossed scratches, with a charged lancet; and others use special scarifiers or rakes, consisting of three or four needle-points inserted in an ivory handle, and drawn either once or twice at right angles over the tense skin, the lymph being then plastered over the scarified surface: this last plan of cross-scratches is favored by some high authorities. A far better plan of preserving lymph than that of drying it on points is that of preserving it in a fluid state in closed capillary tubes, in which form it is ready for use without any preparation. When the operation is successfully performed, the skin at the spot becomes slightly elevated, hard, and red, on the 3d or 4th day; on the 5th or 6th day, a vesicle of bluish-white color forms, with elevated edge and a depressed cup. It is distended with clear lymph, and attains its perfection on the 8th day; and then, or on the 9th day, the vesicle is surrounded by an inflamed ring or areola; on the 9th, 10th, and 11th days, the vesicle becomes a pustule, the cupped form disappears, the areola enlarges till it becomes a circle, with diameter of one to three inches. On the 12th, 13th, and 14th days, the pustule dries up; and in the course of the next week the scab separates and falls off, seldom remaining till the

25th day. It leaves a cicatrix, which usually is permanent in after-life, circular, somewhat depressed, dotted or indented with minute pits, and in some instances radiated. The establishment of the areola is accompanied with constitutional disturbances, as indicated by restlessness and heat of skin, frequent derangement of the stomach and bowels, and occasional swelling of the glands of the armpit. These symptoms are seldom severe, but seldom quite absent. Occasionally the course of the above symptoms is modified, as when they are simply retarded, or simply accelerated, or altogether irregular and spurious; and it should be carefully borne in mind that a V. presenting any deviation from the perfect character of the vesicle and the regular development of the areola is not to be relied on as protective against smallpox. As a general rule, neither the local nor the constitutional symptoms of ordinary V. require any treatment.

Investigations conducted several years ago by order of the Brit. govt. (see *Reports of the Medical Officer of the Privy Council*), whose scope included the arms of nearly half a million children, showed that V., especially among the poor, is often so imperfectly performed as to leave no mark and to exert no protective power. In general, with observance of all precautions, V. should not fail of success in more than one case out of 150 to 170 cases. The official inquiries above referred to showed that not more than one vaccinated child in eight had been so vaccinated as to have the highest possible degree of protection; and not more than one in three could, on the most indulgent estimate, be considered well protected. The main causes of imperfection were the following: (1) the frequency with which practitioners, instead of attempting fully to infect the system, had been satisfied with insertions of lymph sufficient to produce only one, two, or three ordinary vesicles; (2) lack of due attention to *selection* of the lymph used; (3) carelessness and clumsiness in the performance, producing either failure or (usually) less perfect effect; (4) unnecessary substitution of preserved and conveyed lymph for vaccination direct from the arm. Observations by Drs. Buchanan and Seaton during the epidemic of smallpox in London 1863, on more than 50,000 children in national and parochial schools, work-houses, etc., showed that, of every 1,000 children without any mark of V., 360 had scars of smallpox; while of every 1,000 children who had evidence of vaccination, only 1·78 per 1,000 had any such traces: and with regard to the quality and amount of the V., it was found that, of children having four or more cicatrices, only 0·62 per thousand had any trace of smallpox; while of those who had a single bad mark, 19 per 1,000 were scarred by smallpox. Hence the best V. was more than 30 times as protective as the worst, and the worst was more than 47 times better than none at all. Records of more than 15,000 cases at the Smallpox Hospital in London showed that, while the unvaccinated died from smallpox at the rate of 37 per cent., the vaccinated died at the rate of only 6½ per cent.; the mortality among those with four or more scars being only 0·55, while that among those with only a single scar was 7·73 per cent. (See, further, a paper read by Dr. W. B. Carpenter before the Soc. for the Abolition of Compulsory Vaccination in 1882—subsequently republished.) It is to be noted, further, that the protective power of vaccination shows itself in two ways—(1) in shielding the constitution, in the great majority of cases, from any kind of attack of smallpox; (2) in the exceptional occurrence of smallpox in those vaccinated, in so modifying the disease as almost invariably to deprive it of danger to life, or of the disfigurement frequently left by the unmodified disease.

With regard to *revaccination*, its utility and necessity are abundantly demonstrated by experience. This operation should be performed with the same care and pains as primary V.; and it should not be left to periods when smallpox is epidemic, but should be performed on all persons after puberty—this being the more necessary on account of uncertainty as to the perfect success of the primary operation. During an epidemic of smallpox, even young children, if the marks of the primary V. are at all imperfect, should decidedly be revaccinated. In revaccinating, it must always be remembered that the local results of revaccination give no information whatever as to the constitutional condition in which the revaccinated person was with regard to the liability to contract smallpox.

Much has been written regarding the *dangers of vaccination;* and the well-known Rivalta case, in which an infant thus communicated syphilis to a whole population in a remote district of Piedmont (see SYPHILIS), and some deaths from (as was alleged) V. with impure lymph, have directed attention to the subject. On this subject, see Simon's *Papers relative to the History and Practice of Vaccination*. We add only that those who have had most to do with V., and those who have had the most extensive experience in the diseases of children, concur in the belief of the general non-communicability of disease by this operation.

The relations between smallpox in man and cow-pox in the cow claim a passing remark. Jenner believed that the two diseases were essentially the same, and that they had a common origin in the grease of the horse. Various experiments in inoculating healthy cows with smallpox virus—thus obtaining a supply of genuine vaccine lymph—place the identity of the diseases beyond question. The disease really known as 'grease' appears to have nothing to do with cow-pox or smallpox; but the horse occasionally suffers an affection precisely the same as the smallpox in man and the cow-pox in cows; and the lymph from this horse-pox has been successfully used for vaccination. (For methods similar to V. to prevent splenic fever, etc., adopted by Pasteur, see GERM-THEORY.)

VACCINE, a. *văk'sĭn* [F. *vaccin*, vaccine matter—from L. *vaccīnus*, of or from cows—from *vacca*, a cow: It. *vaccino*]: pertaining to or derived from cows, as *vaccine* matter: N. the virus of cow-pox used in vaccination; 'lymph.' VAC'CINATE, v. *-sĭ-nāt*, to inoculate with vaccine matter or the cow-pox, as a preventive of smallpox. VAC'CINATING, imp. VAC'CINATED, pp. VAC'CINATOR, n. *-nā-tėr*, one who vaccinates. VAC'CINA'TION, n. *-nā'shŭn*, the act or practice of inoculating persons with the cow-pox in order to secure them from attacks of the smallpox. VACCINIA, n. *văk-sĭn'ĭ-ă*, an eruptive vesicular disease, originally of the cow, now introduced into the human system as a protection against smallpox. VACCIN'IFER, n. *-sĭn'ĭ-fėr* [Eng. *vaccine;* L. *fero*, I bear]: one from whose body lymph is taken for the purpose of vaccination. VACCININ, n. *văk'sĭ-nĭn*, a fat which replaces others in butter. VACCINIC ACID, an acid found in butter.

VACCINIACEÆ, *văk-sĭn-ĭ-ā'sē-ē:* natural order of exogenous plants, differing from *Ericaceæ* chiefly in having an inferior ovary and succulent fruit. Many botanists make it a section of *Ericaceæ;* in Gray's Botany it is the sub-order *Vaccinieæ*. About 200 species are known, natives of temperate climates, in all parts of the world, chiefly in the n. hemisphere. A few species, remarkable as being parasitic, are natives of Peru. The V. are shrubs, and rarely small trees; with numerous round or angular branches, simple leaves on very short stalks, and flowers solitary or in racemes. Whortleberries (q.v.) and Cranberries (q.v.) are the most familiar examples of the order. The species are numerous in N. America, the genus *Gaylussacia* being known as Huckleberry, and the genus *Vaccinium* (including Cranberry, Cowberry, Bilberry, etc.) having nearly 20 species and varieties in the n. and middle states e. of the Mississippi river.

VÂCH [Skr., speech]: one of the names of Saraswati (q.v.), the female energy of the Hindu god Brahma.

VÂCHASPATI ['lord of speech,' from Skr. *vâch*, speech; *pati*, lord]: in Hindu mythology, a name of *Vr'ihaspati* (q.v.), the instructor of the gods.

VACILLATE, v. *văs'ĭl-lāt* [L. *vacillātus*, pp. of *vacillārĕ*, to sway to and fro: It. *vacillare;* F. *vaciller*]: to waver; to fluctuate in mind or opinion; to be unsteady or inconstant. VAC'ILLATING, imp.: ADJ. unsteady; inclined to fluctuate in opinions or resolutions; unstable; inconstant. VAC'ILLATED, pp. VAC'ILLATINGLY, ad. *-lĭ*. VAC'ILLA'TION, n. *-lā'shŭn* [F.—L.]: a moving one way and the other; unsteadiness; a fluctuation of mind. VAC'ILLANT, a. *-lănt* [F.—L.]: wavering; unsteady; fluctuating. VAC'ILLATORY, a. *-lă-tō-rĭ*, vacillating; unsteady; unreliable.

VACUIST, VACUITY: see under VACUUM.

VACUOLE, n. *văk'ū-ōl,* [L. *vacŭus,* empty]. in *bot.* and *animal histology,* clear space of indefinite size and arrangement in the protoplasm of a cell; in *zool.,* small cavity found in the interior of many of the Protozoa, caused by the presence of little particles of food. **VAC'UOLA'TED**, a. *-lā'tĕd,* full of vacuoles. **VAC'UOLA'TION**, n. *-lā'shŭn,* the process of developing vacuoles.

VACUUM, n. *văk'ū-ŭm* [L. *vacŭum,* an empty space; *vacŭus,* empty: It. *vacuo,* emptiness]: a space empty or devoid of matter solid or aeriform; the opposite of plenum. **IN VACUO**, *in văk'ū-ō* [L.]: in empty space. **VAC'UIST**, n. *-ist,* one who regards a perfect vacuum in nature possible, as opposed to *plenist,* which see. **VACUITY**, n. *vă-kū'ĭ-tĭ* [F. *vacuité*—from L. *vacuitas* or *vacuĭtātem*]: space unfilled or unoccupied by matter; emptiness; void; inanity; thoughtlessness, as *vacuity* of countenance. **VACUOUS**, a. *văk'ū-ŭs,* empty. **VAC'UOUSNESS**, n. *-nĕs,* state of being empty. **VACUUM-BRAKE**, a continuous brake used on railways, in which a partial vacuum is produced in a continuous tube on the cars by means of a steam-jet on the locomotive. Connected with this tube are collapsing bellows which close when exhausted of the air in them, thus drawing the brake-rods (see **BRAKE**). **VACUUM-PAN**: see **SUGAR**—*Manufacture.* **VACUUM-PUMP**, a pump connected with the boiler of a marine engine which creates a vacuum, the water from the sea being thus forced into the boiler by the greater pressure of the atmosphere. **TORRICELLIAN VACUUM**: see **TORRICELLI, EVANGELISTA**: **TORRICELLIAN**.

VAC'UUM: empty space, or space wholly devoid of matter. From Aristotle to Descartes, metaphysical speculators took the question into their own hands, and wrote absurdities about it. Thus, Descartes says that, if a vessel be perfectly empty, its sides must be in contact—confounding the totally distinct ideas of *matter* and *space.* The dictum that *nature abhors a vacuum* was employed to account for the rise of water in pumps; but it was presently found that nature did not, in this case, abhor a V. through more than an elevation of about 32 ft.: see **TORRICELLI, EVANGELSTA**. When the subject was taken up by its legitimate investigators, the experimental philosophers, such absurdities disappeared, but real difficulties were brought to light. So far as experiment has yet shown, it may be inferred that V. cannot exist. The interstellar spaces, though probably devoid of ponderable substance ordinarily known as matter, or at most only occasionally visited by it, are believed to be pervaded by the luminiferous medium: see **ETHER**: **UNDULATORY THEORY**. That this is Matter (q.v.), is inferred from the effects of its vibrations on the eye. It is not merely for providing a medium that seems indispensable for the passing of light and heat that the assumption seems unavoidable that the universe is a *plenum:* Newton expressly said (see **FORCE**, for the quotation at greater length) 'That gravity should be innate, inherent, and essential to matter, so that one body may act upon another at a distance through a *vacuum,* without the mediation of anything else, by and through which their action and force may be conveyed from one to another, is to me so great an absurdity that I believe no man who has in philosophical matters a competent faculty of thinking can ever fall into it.' This sweeping assertion is believed to be substantiated by modern observations of a connection between sun-spots, planetary configurations, and terrestrial magnetism, obviously requiring some material of mediation between the sun and its secondaries; also by Faraday's electrical discoveries.

But, in ordinary language, a V. is said to be produced (more or less *perfect*) when ordinary ponderable matter, such as air, is more or less completely removed from the interior of a closed vessel. Till the beginning of the 19th c., the most perfect V. that could be obtained was what is called the Torricellian V.—i.e., the space above the mercury in a carefully filled barometer tube. Such a V., however, is almost useless for experimental purposes; moreover, it contains mercurial vapor.

A suggestion of Davy, recently reinvented and greatly improved by Andrews, gives the means of procuring a much more perfect V. An ordinary air-pump removes all but about the $\frac{1}{120}$ of the gas in the receiver—i.e., produces a V. of about $\frac{1}{4}$ inch, as it is called. But if the gas employed be carbonic acid, admitted and pumped out several times, for riddance as far as possible of the last trace of air, the remaining gas will be almost wholly taken up by means of moistened caustic potash previously placed in the receiver. Concentrated sulphuric acid also should be present, to desiccate the potash when it has done its work. In this way Andrews easily obtained a V. of about $\frac{1}{4500}$ of an inch, which remained unchanged for a fortnight. Here all but $\frac{1}{135000}$ of the air had been removed. Further improvements, devised by Frankland, Gassiott, and others, have been made in this process, especially for production of (so-called) vacuum-tubes for the study of electrical discharges; and the exhaustion has been sometimes carried so far that the attenuated matter remaining was unable to conduct the discharge of an induction-coil.

VADE, v. *vād* [the same word as *fade*]: in *OE.*, to fade; to vanish; to pass away. **VA'DING**, imp. **VA'DED**, pp.

VADE-MECUM, n. *vā'dē-mē'kŭm* [L. *vadĕ*, go; *mecum*, with me]: a book or other thing which a person carries with him as a constant companion; a pocket-companion or guide; a manual; a handbook.

VAGA, PIERINO DEL, *pē-ā-rē'no dĕl vâ'gâ* (**PIETRO BUONACCORSI**, *pē-ā'tro bô-ŏn-âk-kor'sē*): painter: 1500–47; b. near Florence, Italy. While a little boy he evinced artistic taste, and at the age of 11 years became a pupil of Ridolfo Ghirlandaio, under whom he studied drawing. Accompanying a Florentine artist to Rome, Pierino (little Peter) was recommended by Giulio Romano to the notice of Raffaelle, and became his assistant: with Giulio Romano and Francesco Penni, V. completed the works left unfinished by Raffaelle at his death. At Genoa V. worked on the decorations of the Doria palace. Later he formed a great school in Rome. His most celebrated paintings are the *Creation of Eve* (Vatican) and the *Muses and Pierides* (Louvre).

VAGABOND, a. *văg'ă-bŏnd* [F. *vagabond*, a vagabond—from L. *vagabundus*, strolling about—from *vagor*, I wander; *vagus*, wandering; It. *vagabondo*]: wandering; having no settled home or habitation; unsettled; idle: N. an idle fellow without a settled home; a wanderer; a vagrant; a scamp. **VAG'ABONDAGE**, n. *-bŏnd-āj* [F.], or **VAG'ABONDISM**, n. *-ĭzm*, the idle unsettled life of a vagabond.

VAGARY, n. *vă-gā'rĭ*, **VAGA'RIES**, n. plu. *-rĭz* [L. *vagāri*, to wander, to roam: It. *vagare:* F. *vaguer*]: a wandering of the thoughts; a wild freak; a whimsical purpose; a capricious frolic. *Note.*—VAGARY is probably only an accommodation to the L. *vagāri* in spelling, the true origin being found in some such imitative word as Scot. *figmaleery* or *whigmaleery;* OE. *fegary*, a whim, a freak, crotchet: Ger. *larifari*, syllables without sense, nonsense.

VAGINA, n. *vă-jī'nă* [L. *vagīna*, a scabbard, a sheath: It. *vagina:* F. *vagin*]: a sheath; in *bot.*, the sheath formed by the basal part of certain leaves where they embrace the stem: in *anat.*, the canal or passage which leads from the vulva or external orifice to the uterus; any part which completely surrounds another. **VAGI'NAL**, a. *-năl* or *văj'i-năl*, pertaining to the vagina; resembling a sheath. **VAGI'NANT**, a. *-nănt*, serving to invest or sheathe. **VAGI'NATE**, a. *-nāt*, or **VAGI'NATED**, a. *-nā-tĕd*, furnished or invested as with a sheath. **VAGI'NO-PENNOUS**, a. *-nō-pĕn'nŭs* [L. *penna*, a wing or feather]: having the wings inclosed in a sheath; sheath-winged.

VAGINULA, n. *vă-jĭn'ū-lă*, or **VAGINULE**, n. *văj'ĭn-ūl* [L. *vaginŭla*, a little sheath—from *vagīna*, a sheath]: in *bot.*, a sheath surrounding the basal portion of the archegonium in mosses.

VAGRANT, a. *vā'grănt* [Norm. F. *vagarant*—from L. *vagāri*, to wander: It. *vagare;* F. *vaguer*, to ramble]: wandering from place to place; roving; having no fixed habitation; unsettled: N. one who has no settled abode; an idle wanderer; a sturdy beggar; a vagabond; a tramp. **VA'GRANTLY**, ad. *-lĭ*, in a vagrant manner. **VA'GRANCY**, n. *-grăn-sĭ*, unsettled condition; life or habits of one without a fixed habitation.—*Vagrants* or tramps are classed in Eng. law as (1) idle and disorderly persons, able, in whole or in part, to maintain themselves and their families, but who neglect to do so; (2) rogues and vagabonds, persons suspected of living by crime; (3) incorrigible rogues. Vagrants of the first class are liable to one month's imprisonment with hard labor; those of the second class to 3 months imprisonment and hard labor; while those of the third class are liable to be committed for trial at the sessions, to be kept to hard labor in the interim, and, after conviction, to be sentenced to one year's imprisonment and hard labor, with whipping in the case of males.

In most of the United States various enactments and ordinances of more or less severity have been made for suppression and punishment of vagrants and tramps; but such characters are still numerous. They often pretend to be going about in search of work; but though there are doubtless some unfortunate honest workmen among them (who, if they could be selected from the mass, should receive all possible consideration and aid in securing work), the great majority of tramps form a class who, from mental constitution, would almost rather die than work. It is hard to understand what inducements can lead them to prefer their wandering and shifty life. Apparently the freedom of it and the immunity from work are its chief attractions. They have been well described as wandering about 'ready for any crime, but not planning crimes; quite ready to rob, but very much afraid of large dogs; very courageous against unprotected women, but skulkers when a broad-shouldered laborer turns his eyes their way; with no purpose except wandering, no restraint except hunger, no hope except of getting drunk upon some lucky haul, nomads in the midst of civilization, simple savages without savage resources.'—See BEGGAR: POOR, THE—POOR LAWS.

VAGUE, a. *vāg* [F. *vague*, empty, vague—from L. *vagus*, strolling about, wandering: It. *vago*]: not settled or definite; loose; unfixed; ill-defined; proceeding from no reliable source, as a report; in *OE.*, wandering or unsettled. VAGUE'LY, ad. *-lĭ*. VAGUE'NESS, n. *-nĕs*, state of being uncertain or unsettled; looseness; indefiniteness.—SYN. of 'vague': unsettled; indefinite; ambiguous; undetermined; lax; flying; hazy; doubtful; uncertain.

VAIL, n. *vāl* [a mere abbreviation of *avail*, the anc. Eng. term signifying money given to servants, casual emoluments of an office]: in *OE.*, money given to servants by employers, visitors, or others, as a perquisite or present—hence applied to any similar profits or advantages; customary or stipulated perquisites to servants; also spelled VALE, n. *vāl*—usually in the plural. *Note.*—Money as a gratuity given to a servant by a visitor, and to others, is now usually called a 'tip' in slang.

VAIL, n. *vāl* [same as VEIL, (q.v.)]: that which hides or conceals; a curtain; a separating screen.

VAIL, v. *vāl* [a contr. of OE. *avale*, which see]: in *OE.*, to let fall; to cap to a superior; to express respect or submission by uncovering; to let fall in token of respect, as the sail of a ship at sea; to fall; to let sink in fear; to yield in token of respect. VAIL'ING, imp. VAILED, pp. *vāld*.

VAIN, a. *vān* [F. *vain*—from L. *vānus*, vain, empty: Icel. *vanr*, vain, void: It. *vano:* comp. Gael. *faoin*, foolish, idle, empty]: proud of trifling attainments or petty things; having an unduly high opinion of one's own accomplishments; conceited; ineffectual; fruitless, as an effort; unsatisfying; false. VAIN'LY, ad. *-lĭ*, in a vain manner; foolishly; without effect; to no purpose; idly. VAIN'NESS, n. *-nĕs*, vanity; fruitlessness. VAINGLO'RIOUS, a. proud or boastful to excess of one's own attainments or performances; self-proud. VAINGLO'RIOUSLY, ad. VAINGLO'RY, n. self-pride; excessive pride in one's own performances.

Vanity, n. *văn'ĭ-tĭ* [F. *vanité*—from L. *vanĭtas*, emptiness]: empty pride inspired by an overweening opinion of one's own importance; anything empty, visionary, or unsubstantial; vain pursuit; idle show; ostentatious arrogance; petty pride. **In vain**, ad. to no purpose; ineffectually.—**Syn.** of 'vain': showy; ostentatious; idle; worthless; unimportant; empty; unreal; shadowy; light; inconstant; false; deceitful; delusive; trifling; useless;—of 'vanity': arrogance; presumption; self-conceit; pride; haughtiness; egotism; emptiness; worthlessness; ostentation.

VAIR, n. *vār* [F. *vair*, a kind of fur in heraldry—from L. *varĭus*, different, variegated: It. *vario*, various]: the skin of a species of squirrel, much used in the 14th c. as fur for garments; in *her.*, a series of small shields placed close together, alternately blue and silver, intended to represent the appearance of the skins when sewed edge to edge. **Vairé**, a. *vā'rā*, or **Vairy**, a. *vār'ĭ*, in *her.*, charged with vair: see **Heraldry**.

VAIS'ESHIKA, *vī-sā shē-kă:* one of the two great divisions of the *Nyâya* (q.v.) school of Hindu philosophy, probably a later development of the Nyâya itself, properly so called, with which it agrees in its analytical method of treating the subjects of human research, but from which it differs in arrangement of topics, and especially by its doctrine of atomic individualities or *vis'eshas*—whence its name is derived.

The topics or categories (*padârthas*) under which *Kan'âda*, founder of this system, arranges his subject-matter, are the following six: (1) substance, (2) quality, (3) action, (4) generality, (5) atomic individuality, and (6) co-inherence; and later writers of his school add a seventh category, non-existence. 1. Substance is the intimate cause of an aggregate effect: it is that in which qualities abide, and in which action takes place: it is ninefold—viz., earth, water, light, air, ether, time, space, soul, and *manas*, or the organ of affection. 2. Quality is united with substance: it comprises 24 terms, of which the following are specimens—color, odor, number, dimension, severalty, conjunction, priority, gravity, fluidity, sound, understanding, pleasure, pain, desire, volition, merit, demerit. 3. Action consists in motion, and abides in substance alone: it affects a single, that is, a finite substance, which is matter; and it is either motion upward or downward, or contraction or expansion, or motion onward. 4. Generality abides in substance, quality, and action: it is of two kinds—genus and species. 5. Atomic individuality resides in eternal substances, by which are meant the organ of affection, soul, time, space, ether, earth, water, light, and air: it is the ultimate difference, technically called *vis'esha;* such differences are endless; and two atoms of the same substance, though homogeneous with one another, differ merely so far as they exclude one another. 6. Co-inherence, or perpetual intimate connection, resides in things which cannot exist independently from one another, such as the parts and the whole, quality and the thing qualified, action and agent, species and individual, atomic individuality and eternal substance. 7. Non-existence, the last category, added by the modern Vais'eshikas, is defined by them as one of the following: non-existence which is without beginning, but has an end—as that of a jar, which did not exist until its antecedent non-existence ceased when being formed out of the clay; or non-existence which has a beginning, but no end—as that of a jar smashed by the blow of a mallet; or absolute non-existence, which, extending through all times, has neither beginning nor end—as when it is said that a jar is not on the ground; or mutual non-existence, which is the reciprocal negation of identity—as when it is remarked that a jar is not a piece of cloth. The nature of each of these substances, qualities, actions, etc., is, then, the subject of special investigation.

According to the Vais'eshika system, understanding is the quality of *soul*, and the instruments of right notion are treated of under the head of 'understanding (*buddhi*).' Kan'âda admits of only two such instruments, or *pramân'as*—viz., knowledge which arises from the contact of a sense with its object, and inference. Comparison, revelation, and the other instruments of right notion mentioned in other systems, the commentators endeavor to show are included in these two.—See Eng. translations of portions of Kan'âda's works, by Dr. Ballantyne (Mirzapore 1851, and Calcutta 1848), and by Dr. Roer in *Bibliotheca Indica* (Calcutta 1850); also essays on the V. system by H. T. Colebrooke (*Miscellaneous Essays*, I. Lond. 1837), and Prof. M. Müller in vols. VI., VII., of the *Zeitschrift der deutschen morgenländischen Gesellschaft*.

VAISHN'AVAS, *vish'na-vaz:* one of the three great divisions of Hindu sects: see INDIA—*Religion*. The word, derived from *Vishn'u* (q.v.), designates the worshippers of this deity, and comprises a great variety of sects, and a variety differing in different periods of the mediæval history of India, so that old accounts no longer apply. The common link of all the sects comprised under the name V. is their belief in the supremacy of Vishn'u over the other gods of the Trimûrti (q.v.). The following are the principal sects of this division:

1. The *Râmânujas*, or *Srî Vaishn'avas*, or *Srî-Sampradâyins*—who originated from *Râmânuja*, a reformer, born at Perumbur, in s. India, about the middle of the 12th c., and considered by his followers as an incarnation of *S'esha* (q.v.), the serpent of Vishn'u. This sect has various subdivisions. Their most striking peculiarity is the preparation and the scrupulous privacy of their meals; for should the meal during its preparation, or while they are eating, attract even the looks of a stranger, the operation is instantly stopped, and the viands buried in the ground. They distinguish themselves from other sects by perpendicular and transverse lines drawn with a white earth on their foreheads and other parts of their bodies; also they wear a necklace of holy wood and carry a rosary. Their principal religious tenet is that Vishn'u is the cause and creator of all worlds; that he and the universe are one,

though he is of a twofold form: the supreme spirit or cause, and the gross one, the effect or matter. One of their distinctions from the Vedânta (q.v.) is that they regard their supreme deity as endowed with qualities.

2. The *Râmânandas*, or *Râmâvats*—by far the most numerous class of sectaries in Gangetic India. They belong chiefly to the poorer and inferior classes, except for their inclusion of the Rajputs and military Brahmans. The founder of this sect was *Râmânanda*, assigned to a date between the 13th and the 15th c., and who resided at Benares. The especial object of their worship is Vishn'u, in his incarnation as *Râmachandra*, and his consort *Sîtâ*. They are distinguished by their disregarding the distinction of caste among the religious orders. Their sectarian marks are like those of the Râmânujas.

3. The *Kabîr Panthis*—important sect, whose founder was Kabir, one of the disciples of Râmânanda, above mentioned, and whose date therefore was probably about the end of the 14th c. According to the doctrine of this sect, there is but one God, creator of the world; but, in opposition to the Vedânta (q.v.), they assert that he has a body formed of the five elements of matter, and a mind endowed with the three *gun'as*, or qualities: he is of ineffable purity and irresistible power, eternal, and free from the defects of human nature, but in other respects does not differ from man; so that the pure man is his living resemblance, and after death becomes his equal and associate. God and man are therefore not only the same, but both in the same manner are everything that exists. The desire of the deity to renew the world assumed the shape of a female form; and this form is Mâyâ (q.v.), or illusion, with whom he begot the triad, Brahman, Vishn'u, and S'iva. To understand the falsehood of Mâyâ is the chief aim of man; and so long only as he is ignorant of the source of life, he is doomed to Transmigration (q.v.). Life, they teach, being the gift of God, must not be violated by His creatures. Humanity and truth are two of their cardinal virtues; retirement from the world is deemed desirable; and implicit devotion to the Guru, or spiritual teacher, a supreme duty. It is no part of their faith to worship any deity, or to observe any ceremonies and rites of the Hindus; but they are recommended outwardly to conform to all the usages of tribe and caste, and some even pretend to worship the usual divinities. They have no prescribed mode of dress. Strictly they can scarcely be included among Vaishn'ava sects; yet because of their paying more respect to Vishn'u than to any other god of the Trimûrti (q.v.), and of their friendly intercourse with most of the Vaishn'ava, they are always included with them. They have many subdivisions.

4. The *Vallabhâchâryas*, or *Rudra Sampradâyins*—a sect said to have been founded by *Vishn'u Swâmin;* but his successor, *Vallabha Swâmin*, or *Vallabha Acha'rya* (1479–1532), must be considered the real founder. The tradition is that in his 12th year he began to propagate his tenets. He gained converts, was introduced to the court

of the king of Vijayanagara, was elected as chief of the Vaishn'avas, travelled for nine years through India, and then was honored by a visit from the god *Kr'ishn'a* in person, who enjoined him to introduce his worship, and to found the religion now so widely diffused throughout w. India under the sectarian name *Rudra Sampradâya*. Vallabha ultimately settled at Benares, and there composed 17 works in Sanskrit His sons and grandsons all were teachers and heads of communities of the sect' the most famous being Gokulnâthji (b. 1551). The chiefs of this sect have the title Mahârâj or 'great king;' and the members are of the better or wealthier classes of Hindus. The Mahârâjas, though many of them are ignorant and devoid of sanctity, receive from their followers unlimited homage, solely because of their descent from the founder: at present they number 60 to 70. This sect is widely diffused throughout Bombay, Cutch, Kattywar, and central India, and especially the province of Malwa; and their establishments and temples are numerous throughout the country. The chief authority of the sect is the *Bhâgavata Purân'a* (q.v.), and after it the works of Vallabha. The object of their adoration is Vishn'u (q.v.) in his incarnation as Kr'ishn'a. Among the ten principles of the sect, as laid down by Vallabha, are the following: To secure the firm support of Vallabhâchârya: To forsake the sense of Vaidik opinion and be a suppliant to Kr'ishn'a: To believe that Vallabha is a Gopi, or mistress of Kr'ishn'a: To swell the heart with the name of Kr'ishn'a: To adopt the society of the good, knowing them divine. Out of this code grew up the doctrine that the Guru or Mahârâj is the impersonation of Kr'ishn'a himself, that God and the Guru are necessarily to be worshipped, and that the sectary is bound to bestow on him 'his body, organs of sense, life, heart, and other faculties, and wife, house, family, property, with his own self'—a tenet which has led to the grossest abuses. The temples of the sect have images of Kr'ishn'a, and Râdhâ, his principal wife; the former representing a chubby boy, of dark hue, richly decorated, and eight times a day receiving the homage of his worshippers: these ceremonials include the washing and dressing of the image, which is then presented with refreshments, and anointed and perfumed, after which it is visited while it holds a public court. Annual festivals also are observed. The sect wear distinctive marks on the forehead and elsewhere.

5. The *Mâdhwâchâryas*, or *Brahma Sampradâyins*—a sect founded by a Brahman, *Mâdhwâchârya* (b. 1199), who is regarded as an incarnation of Vâyu, the god of wind, after having been incarnate in preceding ages as Hânumat (q.v.) and Bhima. It seems that he was originally a priest of the S'aiva faith, and encouraged an attempt at compromise between the S'aivas and Vaishn'avas; and in the temples of his sect, images of S'iva are allowed to partake of the worship offered to those of Vishn'u. The essential dogma of this sect is the identification of Vishn'u with the Supreme Soul, as the pre-existent cause of the universe; and this primeval Vishn'u they affirm to be endowed with

real attributes, and, though indefinable, to be most excellent and independent. But besides this independent, there is also a dependent principle; for besides the Supreme Soul, *Paramâtman*, there is a living Soul, *Jivâtman*, which is dependent on the Supreme; and though indissolubly connected with, yet not the same with him. In consequence, they deny the absorption of the human soul into the universal spirit, and the loss of independent existence after death. Thus they differ on a vital point of doctrine from other Vaishn'ava and S'aiva sects. The modes of worshipping Vishn'u they declare to be three: marking the body with his symbols, especially by a hot iron; giving his names to children and objects of interest; and the practice of virtue in word, act, and thought. Final liberation, or freedom from future birth, they consider as the reward for having secured the favor of Vishn'u. The Gurus or superiors of this sect are Brahmans and ascetics, or profess cenobitic observances; the disciples live in their *Maths*, or monasteries, and profess perpetual celibacy. The marks common to the Gurus and the lay votaries are the symbols of Vishn'u on shoulders and breast, and the frontal mark.

6. The *Vaishn'avas of Bengal*—sect forming one-third to one-fifth of the population of the province; were founded by *Chaitanya*, b. 1485. He is regarded as an incarnation of Kr'ishn'a. At the age of 24 he became an ascetic, travelled and taught his doctrine, and had frequent visions of Kr'ishn'a. According to the doctrine of the sect, *Kr'ishn'a* is the Supreme Spirit, who, for various purposes, assumed specific shapes, in which he became incarnate (see VISHN'U). An important innovation is the doctrine of *Bhakti*, or faith, which is held to be more efficacious than knowledge, or charity, or virtue—so efficacious, indeed, that all castes become by such faith equally pure, and therefore all castes are admissible into the sect. Their chief ritual is very simple; it consists of constantly repeating the name of Kr'ishn'a—a practice of which one of their chiefs, Haridâs, set them a remarkable example, as during many years, when he resided in a thicket, he repeated the name of Kr'ishn'a 300,000 times daily. Their other duties are sixty-four in number; but the most important of their obligations is their servile veneration of the spiritual teacher, whom they are bound to regard as the deity himself, and even as of more authority; for they are taught that 'the prayer is manifest in the Guru, and the Guru is Vishn'u himself.' Liberation from terrestrial existence most votaries of this sect do not conceive in the spirit of the Vedânta, which teaches that final deliverance is the absorption of the human soul into the divine essence; but, in their opinion, it is twofold: either perpetual residence of the soul in Swarga, or paradise, with possession of the divine attributes of power, etc.; or elevation to *Vaikun't'ha*, the heaven of Vishn'u, where they enjoy felicity. Besides several divisions of this sect, there are three which are secessions—the *Spasht'a Dâyakas*, the *Kartâ Bhâjas*, and the *Sâhujas*. The first of these is growing

in Calcutta, where their women act as the spiritual teachers of the women of respectable families: this sect deny the divine character and authority of the Guru. The second sect is a recent schism. Of the *Sâhujas*, the last of the three, little is known, their professions and practices being kept secret, but suspected to be immoral.

Besides these Vaishn'ava sects there are about a dozen others of less importance.—For fuller detail, see H. H. Wilson's *Sketch of the Religious Sects of the Hindus*, edited by Dr. Rost in Wilson's Works, I. (Lond. 1862); and on the Vallabhâchâryas, the *History of the Sect of the Mahârâjas* (by Karsandâs Mulji) (Lond. 1865).

VAISYA, n. *vīs'yă:* in *India*, the third or merchant caste of the Hindus: see CASTE: SUDRA.

VAIVODE, n. *vī'vōd:* formerly, a prince of the Danubian provinces; an inferior Turkish officer; also spelled WAIWODE, VOIVODE.

VAKEEL, n. *vâ-kēl':* in the *East Indies*, an ambassador; a representative; a native attorney or agent.

VALAIS, *vâ-lā'* (Ger. *Wallis*): canton of Switzerland; bounded n. by the cantons of Vaud and Bern, and s. by Italy; 2,026 sq. m. It forms one long and deep valley, included between two of the loftiest mountain chains of Europe—the Pennine and the Bernese Alps—and is drained by the Upper Rhone, which, rising at its n.e. extremity, in the glacier of the Gallenstock, falls at the w. boundary of the canton into the Lake of Geneva. No European territory is more completely isolated by mountains. The highest point of the canton is Monte Rosa, 15,127 ft. The greater part of the surface consists of barren mountain slopes; covered in their higher elevations with the greatest of the Swiss glaciers. The forests and pasture-lands supply the inhabitants with their chief occupations; but grain-cultivation also is carried on in the level ground, from a quarter of a m. to three m. wide, along the main channel of the river. The heat at the bottom of the valley is intense in summer, and Indian corn and the vine are successfully grown. V. is connected by great high-roads, and now by railway, with the other parts of French Switzerland and Savoy. The Grimsel and Gemmi passes connect the e. part with German Switzerland; and the Great St. Bernard and Simplon (q.v.) passes connect it with Italy. Cattle, the chief export of V., were formerly driven over the Simplon into Italy; but now the railway tends to divert this trade to w. Switzerland and France. The inhabitants of the Upper V.—one-third of the population—speak German; those of the Lower V., the Vaudois dialect of French. The inhabitants are mostly Rom. Catholics. V. is divided into 13 dixaines or 'tithings,' each of which has its council, and may be said to form a little republic. Each of the dixaines sends four members to a larger council or diet at Sion.—The upper part of V., during the middle ages, acknowledged a very slight feudal dependence on the German empire; the lower part belonged to Savoy. At the period of the struggle of the Swiss with the Duke of Burgundy, the Upper V. took possession of the Lower V., and reduced it to a vassal state; it remained in this condition until 1798, the period of French conquest. Sion (q.v.) and Martigny (q.v.) are the chief towns.—Pop. (1880) 100,216, of which 866 were Protestants; (1888) 101,985.

VALANCE, n. *văl'ăns*, or **VAL'ENCE**, n. *-ĕns* [probably from having been made at *Valence*, in France]: drapery hanging round the head and stead of a bed, or from the head of window-curtains: V. to decorate with fringed drapery. **VAL'ANCING**, imp. **VAL'ANCED**, pp. *-ănst*.

VALCKENAER, *vâl'kĕh-nâr*, **LUDVIG KASPAR**: Dutch philologist: 1715–1785, Mar. 14; b. Leeuwarden. He studied at Franeker, and became prof. of Greek there 1741; of Greek antiquities 1755; and in 1766 was called to the chair of Dutch history at Leyden, where he died. V. was an admirable lecturer and commentator on the classics adding fine critical discernment and thoughtfulness to thorough knowledge of Greek literature and antiquities. Among his more notable works are his recasting of Ursinus's *Virgilius cum Scriptoribus Græcis Collatus* (Leeuwarden 1747): his ed. of the Greek grammarian Ammonius (Leyd. 1739; Leip. 1822), of the *Phœnissæ* (Franek. 1755; Leip. 1824) and the *Hippolytus* (Leyd. 1768; Leip. 1823); his *Diatribe in Euripidis Perditorum Dramatum Reliquias* (Leyd. 1767; Leip. 1824); his ed. of the so-called *Epistles of Phalaris* (GrönIng. 1777). and of the *Idylls* of Theocritus (Leyd. 1779–81; new ed. Leip. 1810). Among his posthumous works are *Callimachi Elegiarum Fragmenta* (Leyd. 1799); *De Aristobulo Judæo* (Leyd. 1806); and *Opuscula Philologica, Critica, Oratoria* (2 vols. Leip. 1808).

VAL'DAI HILLS: see NOVGOROD.

VALDEPEÑAS, *vâl-dā-pān'yâs:* town of Spain, prov. of Ciudad Real; 30 m. e.s.e. of the city of that name. It is a straggling mud-built town, in a district noted for its red wine.—Pop. (1877) 18,876; (1887) 15,404.

VALDIVIA, *vâl-dē'vē-â:* city of Chili, cap. of the prov. of V.; on the river V., 470 m. s. of Santiago; lat. 39° 49′ s., long. 73° 15′ w. It has one of the best harbors on the Pacific coast.—Pop. 6,000.

VALDIVIA, *vâl-dē'vē-â*, **PEDRO DE**: soldier: about 1505–59; b. Spain. He was in the memorable battle of Pavia 1527; accompanied Pizarro to Peru 1532; served in the conquest of Venezuela 1535; rendered effective service to Pizarro in his struggle with Almagro; conquered Chili 1540, and there founded the cities Santiago and Coquimbo. On the assassination of Pizarro, V. returned to Peru and sided at first with Pizarro's bro. Gonzalo against the viceroy, but afterward aided the royal gov. in suppressing Gonzalo's rebellion. Then, as capt. gen. of all the regions s. of Peru, V. made several brilliant military expeditions, and founded the cities Concepcion, Villa Imperial, Villa Rica, Valdivia. He was taken prisoner and put to death by the Araucanians.

VALE, n. *vāl:* a poetic word for VALLEY (q.v.).

VALE: see VAIL 1.

VALEDICTION, n. *văl'ĕ-dĭk'shŭn* [L. *valĕ*, farewell; *dictus*, pp of *dicĕrĕ*, to say]: farewell; a bidding farewell. VAL'EDIC'TORY, a. *-dĭk'tėr-ĭ*, bidding farewell: N. in *Amer. colleges*, an oration or address delivered on bidding farewell.

VALENCE, *vâ-lŏngss'*: town of France, cap. of the dept. of Drome; on a hill on the left bank of the Rhone, here spanned by a fine suspension bridge; 65 m. s. of Lyon, on the railway to Marseilles. The walls with which it is surrounded give it a gloomy appearance, and the streets are narrow. It is the seat of a bp., and has a cathedral founded in the 3d c., but rebuilt in the 11th c., and consecrated by Urban II. 1095. Silk-weaving and silk-throwing are among the chief industries, and there is considerable trade in silk, fruits, wines, etc.—Pop. (1886) 22,453.

VALENCIA, *vâ-lĕn'shĭ-a*, Sp. *vâ-lĕn'thē-â:* province of Spain; one of three provinces into which the former 'kingdom' of V. was divided 1834, the others being Alicante and Castellon de la Plana (see SPAIN); bounded n. by Teruel and Castellon de la Plana, e. by the Mediterranean, s. by Alicante, w. by Albacete and Cuenca: 4,352 sq. m. V. occupies the centre of the ancient kingdom. Along its coast it is level, but rises toward the w. in a series of table-lands which in some parts rise into mountains 4,000 ft. high. The principal rivers are the Guadalaviar and Jucar, which supply an extensive system of irrigation. Wheat, maize, barley, oats, rye, esparto-grass, and fruit of all kinds are extensively grown, and the mulberry is cultivated for silk. Numerous herds of sheep and goats are pastured on the higher grounds, and there is considerable coast fishing. The manufactures include silk, glass, pottery, leather, and soap.—Pop. (1887) 733,978.

VALEN'CIA: ancient city and port of Spain, formerly cap. of the kingdom of V., now of the prov. of V.; on the right bank and 3 m. from the mouth of the river Guadalaviar, 304 m. e.s.e. of Madrid by railway. The Huerta, or 'garden,' 35 sq. m. in extent, in which the city stands, resembles an immense orchard, and is ingeniously watered by an intricate network of pipes and rivulets, laid down by the Moors eight centuries ago. In this garden the carob, citron, orange, palm, and mulberry grow in wild luxuriance. V. is surrounded by battlemented walls, erected by Pedro IV. 1356; the interior of the city is striking and pleasing; most of the streets are macadamized; in the old quarters the houses are closely packed and gloomy-looking, but in the newer parts the buildings are high, gayly-colored, decorated with elegant iron-gilt balconies, and furnished with courts freshened with flowers and cooled by fountains. V. is the see of an abp., and its cathedral, La Seo, begun 1262, classical in the interior and Gothic in the exterior, is 350 ft. long, and at the transepts 216 ft. wide. In the cathedral and its chapels are a number of magnificent pictures, including some by Ribalta and Joanes. The custom-house, dating from 1758, is now a cigar factory, employing 3,500 women. The univ., with public library of 42,000 vols., is well attended. Silk spinning and weaving are extensively carried on, also hemp and cloth weaving, and manufactures of hats, glass, linen, leather, and V. tiles for flooring. V. is now a prosperous summer resort for the people of Madrid.

V., or *Valentia de Cid*, is very ancient. It was destroyed by Pompey, and rebuilt by Sertorius, after which it became a *colonia* or colony. It was taken by the Goths 413, and by the Moors 712. The *Cid* (see CID CAMPEADOR) took it 1094–5, and ruled despotically here till 1099. The union of Ferdinand and Isabella brought it under the Castilian crown. Suchet captured the city 1810.—Pop. (1884) 144,048; (1887) 170,763.

VALEN'CIA: town of Venezuela, S. America, province of Carabobo; 85 m. w.s.w. of Caracas, about 2 m. e. of the Lake of V.; and about 20 m. from Puerto Cabello, on the coast, with which and with Caracas it has active trade. V. is finely situated in an exceedingly fertile district, in which cattle and horses are raised in great numbers.—Pop. (1881) 36,145.

VALENCIA, n., or VALENTIA, n. *va-lĕn'shĭ-a* [etym. not apparent]: fabric of worsted, cotton, and silk for vests.

VALENCIA, or VALENTIA, *vă-lĕn'shĭ-a:* island on the s.w. coast of Ireland; part of county Kerry; separated from the mainland by a narrow arm of V. Bay; 38 m. w.s.w. of Killarney. It is 5½ m. long and 2 m. broad; the soil is in many places good; half the entire area is under cultivation. On the w. side, which is mainly high rocky moorland, are valuable slate and flag quarries. On the n. side is V. Bay, inlet of Dingle Bay; and V. harbor, the most w. in Ireland. Four Atlantic cables have been landed here, 1865, 66, 73, and 74. That laid in 1865 is not now in operation. Another Atlantic cable starts from Ballinskelligs Bay, a little to the s. of V. See ATLANTIC TELEGRAPH. Pop. 2,500.

VALENCIENNES, n. *vă-lĕn'sĭ-ĕnz':* a rich lace, originally manufactured at Valenciennes in France.

VALENCIENNES, *vâ-lŏng-sē-ĕn':* town and fortress of France, dept. of Nord; on the Escaut or Scheldt, 155 m. by rail n.n.e. of Paris. It is well built, but contains few objects of attraction. There are many pleasant promenades in the immediate vicinity. V. is famous for a kind of lace extensively made here, as well as for fine cambrics and woven fabrics and gauzes. Salt-making and sugar-refining are carried on, and there is active trade in timber, wine, and oil. It is the centre of a rich coal-field yielding one-fourth of the coal produced in France. Hence there are numerous foundries, rolling-mills, and machine-shops. V. is the birthplace of Watteau and Froissart.—Pop. (1886) 22,919; (1891) 28,700.

VALENCY, *văl'ĕn-sĭ* or *vā'lĕn-sĭ* [from L. *valens*, having power]: in *chem.*, the relative capacity for combining possessed by an atom as compared with an atom of hydrogen, assumed as a standard. Of some elements one atom can replace only one atom of hydrogen; of other elements one atom can replace 1, 2, 3, 4, or more hydrogen atoms. Thus, when sodium, Na, is dissolved in hydrochloric acid, HCl, each atom of Na replaces one hydrogen atom; but each atom of zinc, Zn, under the same circumstances, takes the place of 2 hydrogen atoms:

$$Na + HCl = NaCl + H$$
$$Zn + 2HCl = ZnCl_2 + H_2$$

The zinc atom, then, has twice the V. or twice the combining power that the sodium has. Similarly, antimony, Sb, and bismuth, Bi, form trichlorides, $SbCl_3$ and $BiCl_3$—an atom of Sb and Bi in each case taking the place of 3 H atoms. So, too, tin, Sn, in the tetrachloride, $SnCl_4$, and phosphorus, P, in the pentachloride, are equivalent to 4 H and 5 H respectively. The difference in combining or saturating power is represented thus: O'', B''', C'''', or C^{iv}, and so on. The chemical elements are classed with respect to V. as:

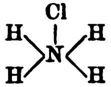
Univalent	elements,	or Monads,	e.g.,	H
Bivalent	"	" Dyads,	"	O''
Trivalent	"	" Triads,	"	B'''
Quadrivalent	"	" Tetrads,	"	C^{iv}
Quinquivalent	"	" Pentads,	"	P^{v}
Sexvalent	"	" Hexads,	"	W^{vi}

And elements of even V.—dyads, tetrads, hexads—are classed together as *artiads* [Gr. *artios*, even]; elements of uneven V.—monads, triads, pentads—are designated *perissads* [Gr. *perissos*, uneven]. Another mode of expressing the V. of elements is that of arranging the symbols in diagrams in which each element is connected with others by a number of lines or connecting bonds corresponding with its degree of equivalence—a monad being connected with other elements by only one such bond, a triad by 3, a pentad by 5, etc.—e.g.:

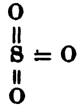
Water, H_2O .... $H - O - H$

Carbon dioxide. CO_2 .... $O = C = O$

Ammonium chloride, NH_4Cl ....

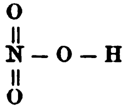


Sulphuric oxide, SO_3 ....



$$\begin{array}{c} O \\ \| \\ S = O \\ \| \\ O \end{array}$$

Nitric acid, HNO_3 ....



$$\begin{array}{l} O \\ \| \\ N - O - H \\ \| \\ O \end{array}$$

It must be understood that these *graphic*, *structural*, or *constitutional* formulæ are not intended to represent the actual arrangement of the atoms in a compound. The lines connecting the different atoms indicate simply the number of units of V. belonging to each atom, and the manner in which these units are disposed of by combination with those of other atoms.

Some elements are *multivalent*—i.e., exhibit varying degrees of V.—e.g., carbon is quadrivalent in marsh-gas, CH_4, bivalent in carbon monoxide, CO; sulphur is sexvalent in the trioxide, SO_3, but quadrivalent in the dioxide, SO_2, and bivalent in hydrogen sulphide, H_2S.

VALENS, *vā'lĕns* or *văl'ĕns*, Emperor of the East: 328–378, Aug 9 (reigned 364–378); b. near Cibalis, Pannonia; brother of Valentinian I. (q.v.), with whom he was associated in imperial authority, receiving, as his share of the empire, Asia, Egypt, and Thrace. His sovereignty was, however, disputed by Procopius, supposed scion of the race of Constantine, who raised his standard in Thrace, was crowned at Constantinople, and for two years held his ground with skill and courage, till the defeat of his troops at Thyatira and Nicosia, and his capture and cruel death, 366. The first prominent act of V.'s reign was a reduction of 25 per cent. in the taxes, which gained the general good-will of his subjects. The prolonged imprisonment of 3,000 Ostrogoths, sent to aid Procopius, led to a war 367–369: the contest was carried on in the country of the Goths, and was in favor of the Romans. Difficulties arose immediately afterward (370) with the Persians, who were desirous of possessing Armenia; and though the troops of V., as the ally of the Armenian monarch, frequently came into collision with those of Persia, war was not declared till the end of 372. The Romans were victorious. V., who had removed to Antioch at the beginning of the war, now occupied himself with the religious quarrels of the Arians and the orthodox party, then raging over the whole eastern empire. Incapable of independent judgment, he had adopted the views of his Arian councilors, and under their guidance punished the more obstinate of the 'heretics.' At the same time, a conspiracy, prompted by professors of magic arts, who declared that the name of V.'s successor should begin with *Theod*, was discovered, its promoters and agents punished with death, as well as those whose names began with that unlucky prefix. Affairs on the e. frontier again assumed a threatening aspect; but the Romans, disinclined further to interfere with the Persians, concluded a somewhat discreditable treaty 376. Meanwhile the Goths, who had for some time been peacefully settled in Dacia, were assailed by the advancing hordes of the Huns; the Ostrogoths, the first to feel the shock, were partly incorporated, and the remainder forced to retreat; the Visigoths next attempted to stem the torrent, but without success, and a multitude of fugitives crowded to the n. bank of the Danube. V. gave permission to a large body of Goths under Fritigern to cross into Mœsia and Thrace, and take possession of the waste lands in these provinces; the fugitive Ostrogoths soon afterward crossed the river without permission; and the alarm which the numbers and turbulence of his new subjects speedily aroused led V. to the adoption of such impolitic measures that the gratitude of the Goths for the shelter afforded was turned to bitter resentment. V. resolved on war; and marching against the barbarians, engaged them near Adrianople 378, Aug. 9. His army was totally routed, and two-thirds of it, including V. himself and most of his chief officers, left dead on the field.—See Gibbon's *Decline and Fall*, chaps. xxv. and xxvi.; Tillemont's *Histoire des Empereurs*, V.

VALEN'TIA: Irish island: see VALENCIA.

VALENTINE, n. *văl'ĕn-tīn:* letter containing some pictured representation conveying sentiments of love or burlesque, sent by one person to another on Feb. 14, the day of the festival in the Chh. of Rome in honor of St. *Valentine,* and the day on which birds were popularly supposed to choose their mates; a love-letter: a sweetheart.

VALENTINE, *văl'ĕn-tīn,* BASIL: German alchemist, of whom little is known: 12th c., according to some, but more probably end of the 15th c. It has been stated that he was a monk of the order of St. Benedict, in St. Peter's Convent at Erfurt; but his name does not appear on the list at Erfurt, nor on the general list at Rome. V. was a diligent seeker for the philosopher's stone, and wrote, mostly in the Old Upper Saxon dialect, a number of works, chiefly on the process of transmutation. Lenglet's *History of the Hermetic Philosophy*, III., contains a complete list. Some of the titles are curious—e.g., *Basil Valentine's Twelve Keys of Philosophy, Apocalypsis Chymica, Revelation of the Mystery of the Essential Colors of the Seven Metals, The Triumphal Car of Antimony, A Chemico-philosophical Tract concerning Things Natural and Præternatural,* etc. These were not printed till 1602; later, many were pub. as French translations; a few still remain in MS.

VALENTINE, *văl'ĕn-tīn,* EDWARD VIRGINIUS: sculptor: b. Richmond, Va., 1838, Nov. 12. In boyhood he attended lectures on anatomy in Richmond; he was first stimulated to love of plastic art on visiting the exposition of 1851 at New York. Returning to Richmond, he took lessons in drawing and modelling, and 1859 visited Paris, where he became pupil of Couture. Then he studied his art in Florence under Boaniuti, and in Berlin under Kiss, who was to the young American student not only a master but a warm friend. In Berlin he studied also drawing and the history of art. Returning to Richmond after the war, he exhibited a statuette of Gen. Robert E. Lee. He has executed portrait busts of Gens. Beauregard, J. E. B. Stuart, 'Stonewall' Jackson, Albert Sidney Johnston, and other southern leaders; a reclining figure of Gen. Lee in the chapel of Washington and Lee Univ.—one of the noblest works of monumental sculpture in America; a bronze statue of John C. Breckinridge; a statue of 'Stonewall' Jackson for Lexington, Va.; also several noteworthy ideal and historic figures and groups, among them *Andromache and Astyanax,* his greatest work in that class.

VALENTINE'S DAY, St.: day commemorative of two saints (out of a great number of the same name), formerly observed in England, Scotland, and parts of France, by peculiar and amusing customs in relation to an allotment of young men and young women to each other. In the 15th c. this amusing observance of the day was popular with the upper classes and in vogue at European courts. The imaginary engagements made in sport on that day were supposed to hold good through the year, and often resulted in weddings.—In later times the observance degenerated to the sending of tender or ridiculous love-letters, and was long in usage in the United States. In recent years it has been almost discarded as an absurdity and a nuisance.—The two saints of the early centuries that seem to have had commemoration on the day, were Valentinus, presbyter and martyr (beheaded Feb. 14), and Valentinus of Interamna, bp. and martyr. How the peculiar observance came to be associated with the day of these saints is not known.—See Brand's *Popular Antiquities;* Chambers's *Book of Days*, I.

VALENTINIAN, *văl-ĕn-tĭn'ĭ-an* (Valentinianus, *văl-ĕn-tĭn-ĭ-ā'nŭs*), I., Roman Emperor: 321–375, Nov. 17 (reigned 364–375); b. at Cibalis, Pannonia; son of Gratianus (a rope-maker who had enlisted in the army, and risen to the grade of *comes militum*). V. entered the army at an early age, and, aided by the military renown of his father, rapidly rose in rank under Emperors Constantius and Julian; but was degraded by Constantius 357, and, for his publicly expressed contempt for paganism, banished by Julian 362. Restored to favor in the following year, he distinguished himself in the East, and on the death of Jovian was unanimously chosen as his successor 364, Feb. 26. A month after his accession, he chose as his colleague his brother Valens (q.v.), to whom he resigned the govt. of the East, reserving for himself Illyricum, Italy, the Gauls, Britain, Spain, and Africa. During V.'s reign, the utmost vigilance was required to preserve the frontier districts of the empire, now in its decay, from the ravages of the barbarians, who, like vultures, had gathered round their prey. The Alemanni repeatedly (366–368) ravaged the e., and the Saxons (370) the n.e., of Gaul; Illyricum was wasted (370) by the Quadi, and Africa by the s. desert tribes. The internal administration was excellent, for the emperor added vigilance and impartiality to his ability, prudence, and firmness; and his cognizance of any abuse or injustice, by whomsoever perpetrated, was the signal for its speedy rectification and the punishment of the offender. Though himself a zealous churchman, he repelled the solicitations of the bishops who wished him to interfere in the religious disputes of the time, permitted his subjects to adopt whatever religion they chose, and strictly forbade all persecution or annoyance on account of religious belief, even maintaining the 'pontifices' of the provinces in the privileges which they had possessed under Julian. On account of the scandalous abuse by ecclesiastics of their influence over their penitents, he excluded priests and monks from the right of succession to property; judicial proceedings were forbidden to be held in private; the extreme license of speech hitherto allowed to advocates was restrained; gratuitous medical attendance was provided for the poor of Rome; and schools were established throughout the empire. The success of V.'s administration was doubtless due in great part to his fortunate choice of officers: Theodosius the Elder in Africa and Britain, Jovinus in Gaul, and Theodosius the Younger (afterward emperor) in Illyricum, form a trio distinguished by loyalty, administrative ability, and military talent, contrasting strongly with their predecessors in office. V.'s private life was a model of morality and economy; and, according to the summation of the trustworthy Ammianus, 'he had so many good qualities that, if everything had been equal in him, he would have been another Trajan or Marcus Aurelius.' His one fault was an ungovernable temper, which led him into occasional excessive cruelties, and ultimately caused his death. While giving audience to the deputies of the Quadi, with whom he was at war, he worked himself into such a passion as to rupture a blood-vessel in his chest, and he fell back dead in the arms of his guards. By his first wife, he had one son, Gratianus (q.v.); and by the second, Justina, another son, Valentinian, and three daughters, one of whom, Galla, became wife of Emperor Theodosius I.

VALENTIN'IAN (VALENTINIA'NUS) **II.**, Emperor of part of the Western Roman Empire, consisting of Italy, Illyricum, and Africa—his half-brother Gratianus (q.v.) ruling the rest: 372–392, May 15 (reigned 375–392); younger son of Valentinian I. by his second wife, Justina. During his long minority, Empress Justina administered the govt. from Milan. V., who had given promise of good administrative qualities, was murdered by a Frank named Arbogast, whom he had dismissed.

VALENTIN'IAN III., Emperor of the Western Roman Empire: 419–455, Mar. 16 (reigned 425–455); grand-nephew of Valentinian II., and son of Constantius III. by Placidia, daughter of Theodosius the Great and Galla. V. was a weak and contemptible prince, yet his reign is one of the interesting epochs of Roman history, exhibiting the internal weakness and corruption of the empire, the gradual closing with it of its irresistible barbarian foes; the sad picture lightened from time to time with a flash of the warrior-spirit of old Rome. V. may be said never to have ruled though he sat on the imperial throne for 30 years: his mother, Placidia, governed till her death 450, and was succeeded by the eunuch Heraclius. The regulations enacted for the internal administration were creditable, especially when ecclesiastical interests were involved. But the corruption of manners, the extinction of 'public spirit,' the exactions of the tax-collectors and of the commissioners who were appointed to prevent these exactions, the general employment of the powers of the executive in avenging private quarrels, and the impossibility of obtaining redress for injuries, plainly showed that the empire had fallen beyond remedy, and that, if not destroyed by assailants from without, it would of itself speedily crumble to pieces. The early part of V.'s reign was disturbed by the contests between the 'comites' Boniface and Aëtius, the former of whom had supported, and the latter resisted, V.'s claims to the throne. Aëtius by his calumnies prevailed on the empress to declare the upright governor of Africa a public enemy; and the latter, in his resentment, called to his aid the Vandals under Genseric (q.v.), and Africa was lost to the empire. Though the Franks, Goths, Burgundians, and other German nations who had encroached on the empire, were successively defeated and repelled by Aëtius, and the destructive career of the formidable Huns brought almost to a close on the field of Chalons, the labor of defending an extensive empire from attack on all sides was too great; consequently much of Spain and Gaul was ultimately seized by the Suevi and Visigoths, n. Italy was ravaged by the Huns, Sicily and Sardinia by the Vandals, and even Rome repeatedly besieged, while Britain was abandoned to the Picts and Scots, and the empire practically dismembered. Aëtius was murdered 454. V., who had ravished the wife of his intimate friend Maximus, was murdered in the following year by friends of Maximus and Aëtius.

VALENTIN'IANS: Gnostic sect or school; followers of Valentinus, native of Egypt, but supposed to have been of Jewish origin, who went from Alexandria to Rome about 138. and there introduced a strange compound of Judaism and Gnosticism. Valentinus is said to have died at Rome (or, according to others, at Cyprus) about 160. He is said to have claimed that his doctrines were received partly from a pupil of the apostle Paul, and partly by direct revelation. He divided the higher spiritual world into 15 pair of æons (see ÆON), each consisting of a male and a female. The first pair, or syzygy, is made up of Bythos, or God in Himself, and Ennoia, or God as existing in His own thoughts; from these emanated Nous (Intelligence) and Aletheia (Truth), and so on. As the last æon, Sophia (Wisdom) transgressed the bounds that had been laid down by the æon Horos, and a part of her being became lost in Chaos, and there was formed a crude being, called Achamoth, which, through the Demiurge (q.v.) that emanated from it, created the corporeal world. Horos now imparted to the souls of men (for all the bodies composing the corporeal world are possessed of souls) a *pneumatic* or spiritual element; but this attained to full activity only when Christ, a collective emanation from all the æons, appeared as Saviour, and united himself with the man Jesus. In the end, all that is pneumatic, and even the originally psychic or soul element in as far as it has assimilated itself to the psychic, will return into the Pleroma (q.v.): see GNOSTICS.

VALENTINITE, n. *văl-ĕn'tin-īt* [after Basilius *Valentinus*]: white oxide of antimony, a mineral of a whitish-gray color, found in veins in the primary rocks along with other ores of antimony, lead, and zinc.